SyncMaster T190N/T190GN/T200N/T200GN/T220N/T220GN

LCD Monitor

User Manual

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Safety Instructions

Notational

Note

These safety instructions must be followed to ensure your safety and prevent property damage.

Make sure to read the instructions carefully and use the product in the correct manner.

Warning / Caution

Otherwise, it may result in death or personal injury.

Otherwise, it may result in personal injury or property damage.

Notational Conventions

Prohibited	Important to read and understand at all times
Do not disassemble	Disconnect the plug from the outlet
Do not touch	Ground to prevent an electric shock

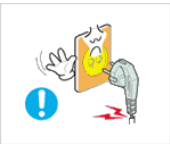
Power

When not used for extended period of time, set your computer to DPM.

If using screen saver, set it to active screen mode.

The images here are for reference only, and are not applicable in all cases (or countries).

Shortcut to Anti-Afterimage Instructions

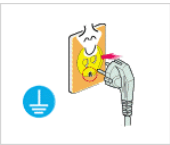


Do not use a damaged power cord or plug or a damaged or loose power outlet.

- Otherwise, this may result in electric shock or fire.

Do not touch the power plug with wet hands when removing or plugging the plug into the outlet.

- Otherwise, this may result in electric shock.



Make sure to connect the power cord to a grounded power outlet.

- Otherwise, it may result in electric shock or personal injury.

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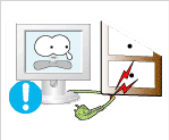
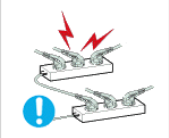
Ensure that the power plug is plugged into the power outlet firmly and correctly.

- Otherwise, this may result in fire.



Do not forcefully bend or pull the power plug and do not place any heavy material on it.

- Otherwise, this may result in fire.



Do not connect multiple appliances to the same power outlet.

- Otherwise, this may cause fire due to overheating.

Do not disconnect the power cord while using the product.

- Otherwise, this may result in damage to the product due to electric shock.

To disconnect the apparatus from the mains, the plug must be pulled out from the mains socket, therefore the mains plug shall be readily operable.

- This may cause electric shock or fire.

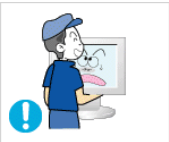
Use only the power cord provided by our company. Do not use the provided power cord of another product.

- Otherwise, this may result in fire or electric shock.

Installation

Be sure to contact an authorized Service Center when installing your monitor in a location with heavy dust, high or low temperatures, high humidity, and exposed to chemical substances and where it operates for 24 hours such as at airports, train stations etc.

Failure to do so may cause serious damage to your monitor.



Do not drop the monitor when moving it.

- This may cause damage to the product or the person carrying it.

Ensure that at least two persons lift and move the product.

- Otherwise, it may be dropped and cause personal injury, and/or damage the product.

When installing the product in a cabinet or rack, make sure that the front end of the bottom of the product does not project out.

- Otherwise, it may fall or cause personal injury.
- Use a cabinet or rack of a size appropriate to the product.

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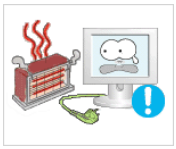
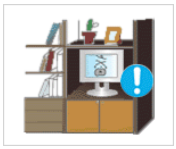
DO NOT PLACE CANDLES, MOSQUITO REPELLANT, CIGARETTES AND ANY HEATING APPLIANCES NEAR THE PRODUCT.

- Otherwise, this may result in fire.



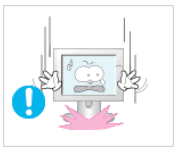
Keep heating appliances as far away from the power cord or the product as possible.

- Otherwise, this may result in electric shock or fire.



Do not install it in a badly ventilated location such as a bookcase or closet.

- Otherwise, this may result in fire due to an increase in the internal temperature.



Put down the monitor carefully.

- Failing to do so may damage the monitor.

Do not place the front of the product on the floor.

- Otherwise, this may result in damage to the screen display.

Ensure that an authorized installation company installs the wall mount.

- Otherwise, it may fall and cause personal injury.
- Make sure to install the specified wall mount.

Install your product in a well ventilated location. Ensure that there is a clearance of more than 10 cm from the wall.

- Otherwise, it may result in fire due to an increase in the internal temperature.

Ensure that the packaging vinyl is kept away from children.

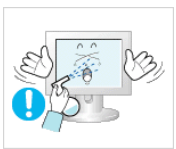
- Otherwise, it may result in serious harm (suffocation) if children play with it.

If the height of your monitor is adjustable, do not place any object or part of your body on the stand when lowering it.

- This may cause damage to the product or the person carrying it.

Clean

When cleaning the monitor case or the surface of the TFT-LCD screen, wipe with a slightly moistened and soft fabric.



Do not spray cleaner directly onto the surface of the product.

- Otherwise, this may result in the discoloration and distortion of the structure and the screen surface may peel off.

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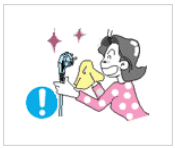
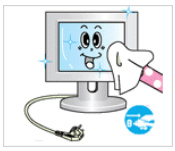
Clean the product using a soft cloth with a monitor cleaner only. If you must use a cleaner other than the monitor cleaner, dilute it with water at a ratio of 1:10.



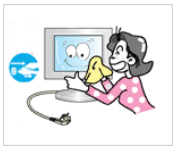
When cleaning the power plug pins or dusting the power outlet, clean it with a dry cloth.

- Otherwise, it may result in fire.



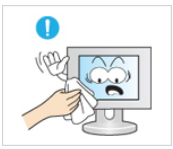
When cleaning the product, make sure to disconnect the power cord.

- Otherwise, it may result in electric shock or fire.



When cleaning the product, disconnect the power cord and clean it softly with a dry cloth.

- (Do not use chemicals such as wax, benzene, alcohol, thinner, mosquito repellant, lubricant, or cleaner.) These may change the appearance of the product surface and peel off the indication labels on the product.



Since the product housing is easily scratched, make sure to use the specified cloth only.

- Use the specified cloth adding only a little water. As the product may be scratched if there is any foreign material on the cloth, make sure to shake it thoroughly before using it.

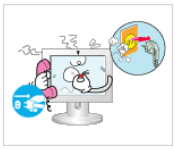
When cleaning the product, do not spray water directly onto the main body of the product.

- Ensure that water does not enter the product and that it is not wet.
- Otherwise, this may result in electric shock, fire or a malfunction.

Others

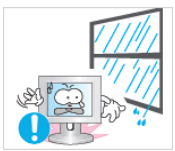
The product is a high voltage product. Ensure that users do not disassemble, repair or modify the product themselves.

- Otherwise, this may result in electric shock or fire. If the product needs to be repaired, contact a Service Center.



If there is a strange smell or a strange sound or smoke is coming from the product, disconnect the power plug immediately and contact a Service Center.

- Otherwise, this may result in electric shock or fire.



Do not place this product in a location exposed to moisture, dust, smoke, water, or in a car.

- Otherwise, this may result in electric shock or fire.

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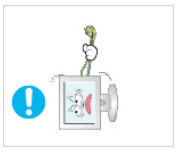
When you drop the product or the case is broken, turn the power off and disconnect the power cord. Contact a Service Center.

- Otherwise, this may result in electric shock or fire.

If thunder or lightening is occurring, do not touch the power cord or antenna cable.

- Otherwise, this may result in electric shock or fire.



Do not try to move the monitor by pulling only the wire or the signal cable.

- Otherwise, it may fall and result in electric shock, damage to the product or fire due to damage to the cable.

Do not lift or move the product back and forwards or right and left while only holding the power cord or signal cables.

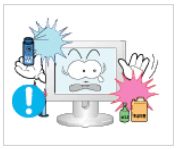
- Otherwise, it may fall and result in electric shock, damage to the product or fire due to damage to the cable.

Make sure that the ventilating opening is not blocked by a table or curtain.

- Otherwise, it may result in fire due to an increase in the internal temperature.

Do not place any containers containing water, vases, flowerpots, medicines as well as any metal on the product.

- If water or a foreign material enters the product, disconnect the power cord and contact a Service Center.
- This may result in a product malfunction, electric shock, or fire.



Do not use or keep combustible spray or flammable material near the product.

- Otherwise, this may result in an explosion or fire.

Do not insert any metal, such as chopsticks, coins, pins and steel, or flammable objects, such as matches or paper, inside the product (through the ventilating openings, input and output terminals, etc).

- If water or foreign material enters the product, disconnect the power cord and contact a Service Center.
- Otherwise, this may result in electric shock or fire.

When using a fixed screen for a long time, an afterimage or stain may occur.

- If you are not using your product for a long period of time, put it into sleep mode or use a moving screen saver.

Set a resolution and frequency appropriate to the product.

- Otherwise, your eyesight may be damaged.

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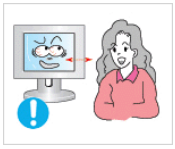
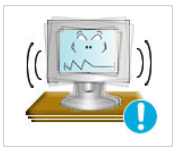


If you continually move closer to the product screen, your eyesight may be failing.

To ease eye strain, take at least a five-minute break after every hour of using the monitor.

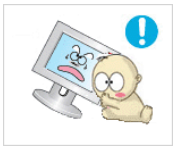


Do not install it in an unstable location such as an unstable rack or uneven surface or a location exposed to vibrations.

- Otherwise, it may fall and cause personal injury and/or damage the product.
- If you use the product in a location exposed to vibrations, it may damage the product and result in fire.

When moving the product, turn the power off and disconnect the power plug, antenna cable, and all the cables connected to the product.

- Otherwise, it may result in electric shock or fire.

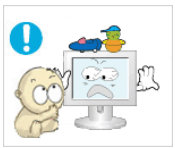


Ensure that children do not hang onto the product or climb up onto the product.

- The product may fall and cause personal injury or death.

If you do not use the product for a long period of time, disconnect the power cord from the power outlet.

- Otherwise, this may result in overheating or fire due to dust, and may result in fire due to electric shock or leakage.

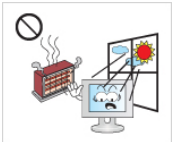


Do not place any heavy items or toys or confectionery, such as cookies etc. that may attract the attention of children and to the product.

- Your children may hang onto the product causing it to fall and this may result in personal injury or death.

Do not turn the product upside down or move it while holding only the stand.

- Otherwise, it may fall and result in personal injury and/or damage to the product.



Do not place the product in a location exposed to direct sunlight or near any heat such as a fire or heater.

- This may reduce the lifetime of the product, and may result in fire.

Do not drop any objects onto the product or cause any impact to the product.

- Otherwise, this may result in electric shock or fire.

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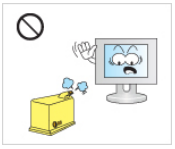
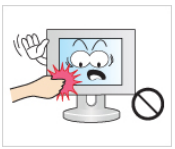


Do not use a humidifier or kitchen table near the product.

- Otherwise, this may result in electric shock or fire.

When there is a gas leak, do not touch the product or the power plug but ventilate immediately.

- If a spark occurs, it may cause an explosion or fire.



If the product has been turned on for a long time, the display panel becomes hot. Do not touch it.

- Keep the small accessories in a location out of the reach of children.

Be careful when adjusting the angle of the product or the height of the stand.

- This may result in personal injury as your hand or fingers may become caught.
- Also, if you tilt the product too far, it may fall and cause personal injury.

Do not install the product in a location low enough for children to reach.

- Otherwise, it may fall and result in personal injury.
- Since the front part of the product is heavy, install the product on a level and stable surface.

Do not put any heavy objects on the product.

- This may result in personal injury and/or damage to the product.

Good Postures When Using the Monitor

When using the product, use it in the correct position.

- Keep your back straight while looking at the product.
- The distance between your eyes and the screen should be between 45 to 50 cm. Look at the screen from a slightly higher location than the height of the screen.
- When using the product, use it in the correct position.
- Adjust the angle so that light is not reflected on the screen.
- Place your arms perpendicular to your sides and allow your arms to be level with the back of the hand.
- Keep your elbow at 90 degrees.

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- Keep your knees at greater than 90 degrees, and keep your heels firmly on the floor. Keep your arms lower than your heart.

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Introduction

Package Contents

Note

Please make sure the following items are included with your monitor.

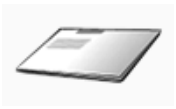
If any items are missing, contact your dealer.

Contact a local dealer to buy optional items.

Unpacking

Monitor

Manuals



Quick Setup Guide

Warranty Card

(Not available in all locations)

User's Guide

Cables

D-Sub Cable

Power Cord

Others

Cleaning Cloth

Cable holding ring

Stand Body

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Others

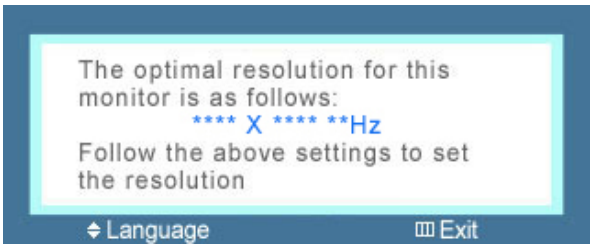
Stand Base

Note

Cleaning Cloth is only provided for highly polished black products as a product feature.

Your Monitor

Initial Settings


The optimal resolution for this monitor is as follows:
**** X **** **Hz
Follow the above settings to set the resolution
Language
Exit

Select the language using the up or down key.

The displayed content will disappear after 40 seconds.

Turn the Power button off and on. It will be displayed again.

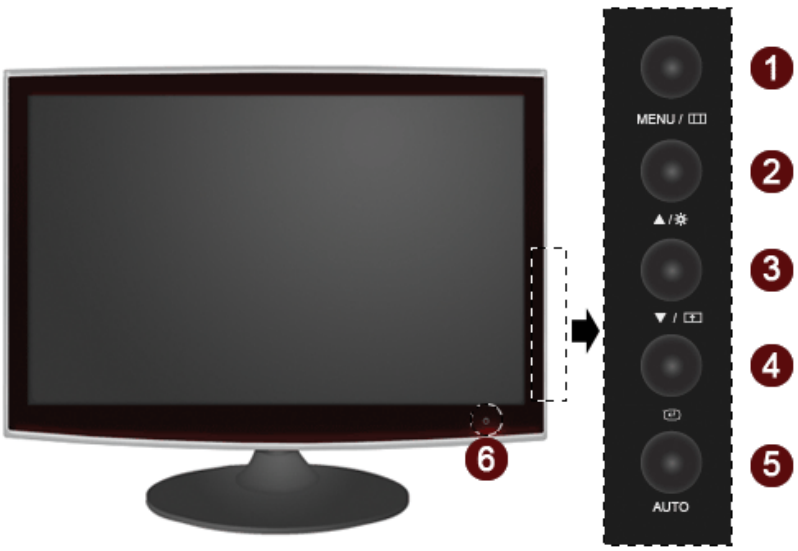
It can be displayed up to three (3) times. Make sure to adjust the resolution of your PC before reaching the maximum count.

Note

The resolution displayed on the screen is the optimal resolution for this product.

Adjust your PC resolution so that it is the same as the optimal resolution for this product.

Front



1 *MENU button [MENU/]*

Opens the on-screen menu and exits from the menu. Also use to exit the OSD menu or return to the previous menu.

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2 ***Brightness** button [☼]*

When OSD is not on the screen, push the button to adjust brightness.

>> Click here to see an animation clip

3 ***Customized Key**[⬆]*

You can customize key assignment for the Custom button according to your preferences.

Note

You can configure the customized key for a required function via **Setup** > **Customized Key**.

2 3 *Adjust buttons [▲/▼]*

These buttons allow you to adjust items in the menu.

4 *Enter button[↵]*

Activates a highlighted menu item.

5 *AUTO button*

Use this button for auto adjustment.

>> Click here to see an animation clip

6 *Power button [⏻]*

Use this button for turning the product on and off.

Note

The button to the right of the monitor are touch-sensitive buttons.

Touch a button lightly with your finger.

Power Indicator

This light is lit when operating normally, and blinks once when your adjustments are saved.

Note

See PowerSaver described in the manual for further information regarding power saving functions. For energy conservation, turn your monitor OFF when it is not needed or when leaving it unattended for long periods.

Rear

Note

The configuration at the back of the product may vary from product to product.

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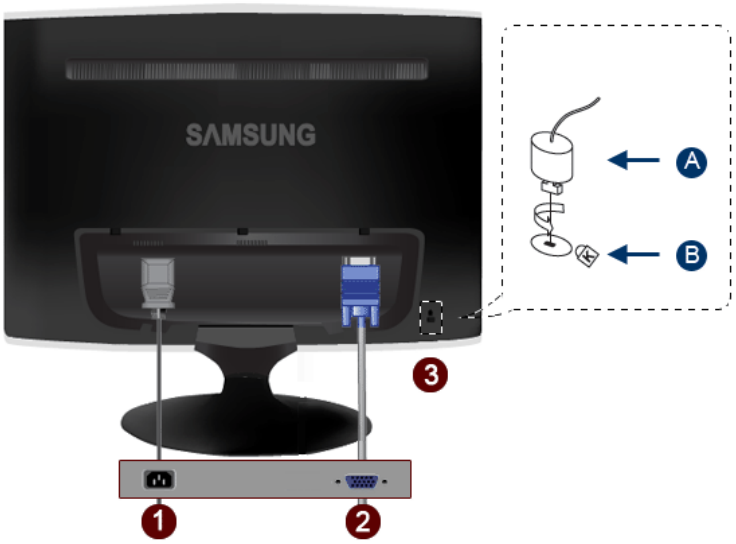

1 *POWER port*

Connect the power cord for your monitor to the POWER port on the back of the product.

2 *RGB IN port*

Connect the D-sub cable to the 15-pin, RGB IN port on the back of your monitor.

3 *Kensington Lock*

The Kensington Lock is a device used to physically fix the system when using it in a public place. The locking device has to be purchased separately. The appearance and locking method may differ from the illustration depending on the manufacturer. Refer to the manual provided with the Kensington Lock for proper use. The locking device has to be purchased separately.

Note

The location of the Kensington Lock may be different depending on its model.

Using the Anti-Theft Kensington Lock

1. Insert the locking device into the Kensington slot on the Monitor B and turn it in the locking direction A.
2. Connect the Kensington Lock cable.
3. Fix the Kensington Lock to a desk or a heavy stationary object.

Note

See Connecting Cables for further information regarding cable connections.

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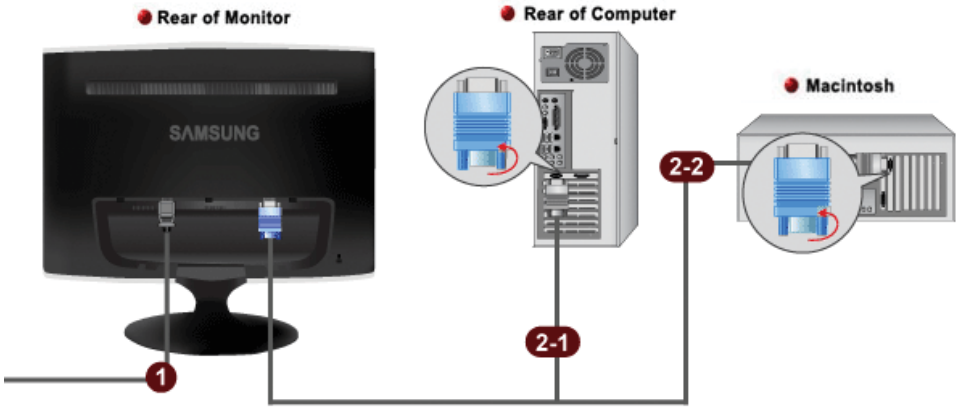
Connections

Connecting Cables



1 Connect the power cord for your monitor to the power port on the back of the monitor.

Plug the power cord for the monitor into a nearby outlet.

2 Use a connection appropriate for your computer.

2-1 Using the D-sub (Analog) connector on the video card.

- Connect the signal cable to the 15-pin, D-sub port on the back of your monitor.

[RGB IN]

2-2 Connected to a Macintosh.

- Connect the monitor to the Macintosh computer using the D-sub connection cable.

Note

If the monitor and the computer are connected, you can turn them on and use them.

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Using the Stand

Monitor Assembly

Monitor and Bottom

Folding the base

Note

You can tilt the monitor upwards at an angle of -1° to 21°.

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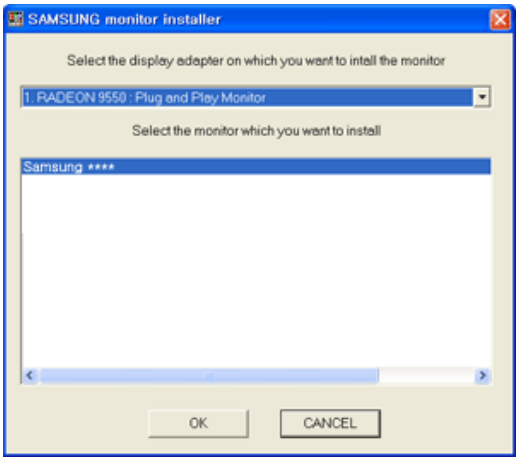
Using the Software

Monitor Driver

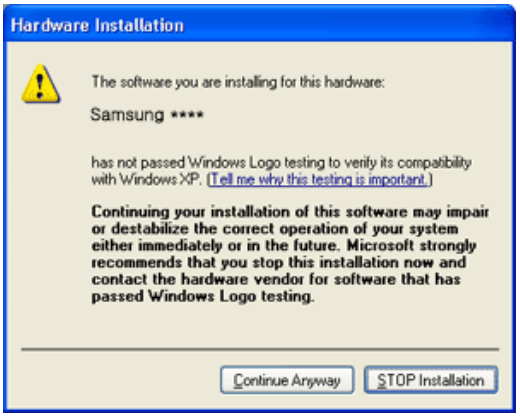
> **Note**
>
> When prompted by the operating system for the monitor driver, insert the CD-ROM included with this monitor. Driver installation is slightly different from one operating system to another. Follow the directions appropriate for the operating system you have.
>
> Prepare a blank disk and download the driver program file at the Internet web site shown here.
> **Internet web site :**
>
> http://www.samsung.com/ (Worldwide)

Installing the Monitor Driver (Automatic)

1. Insert CD into the CD-ROM drive.
2. Click "Windows".
3. Choose your monitor model in the model list, then click the "OK" button.


SAMSUNG monitor installer
Select the display adapter on which you want to intall the monitor
1. RADEON 9550 : Plug and Play Monitor
Select the monitor which you want to install
Samsung ****
OK
CANCEL

4. If you can see following message window, then click the "Continue Anyway" button. Then click "OK" button (Microsoft® Windows® XP/2000 Operating System).


Hardware Installation
The software you are installing for this hardware:
Samsung ****
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

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Note

This monitor driver is under certifying MS logo, and this installation doesn't damage your system.

The certified driver will be posted on Samsung Monitor homepage.

http://www.samsung.com/

Installing the Monitor Driver (Manual)

Microsoft® Windows Vista™, Operating System

1. Insert your Manual CD into your CD-ROM drive.
2. Click (Start) and "Control Panel". Then, double-click on "Appearance and Personalization".

3. Click "Personalization" and then "Display Settings".

4. Click "Advanced Settings...".

5. Click "Properties" in the "Monitor" tab. If the "Properties" button is deactivated, it means the configuration for your monitor is completed. The monitor can be used as is.

   If the message "Windows needs..." is displayed, as shown in the figure below, click "Continue".

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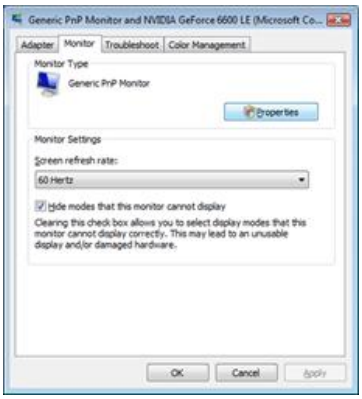
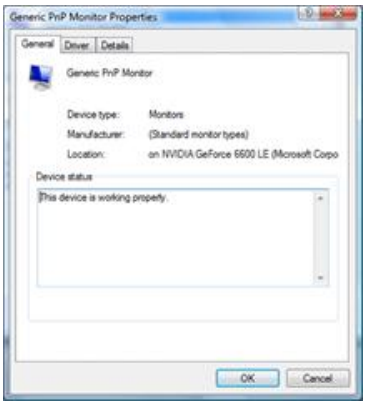

Generic PnP Monitor and NVIDIA GeForce 6600 LE (Microsoft Co...
Adapter
Monitor
Troubleshoot
Color Management
Monitor Type
Generic PnP Monitor
Properties
Monitor Settings
Screen refresh rate:
60 Hertz
Hide modes that this monitor cannot display
Clearing this check box allows you to select display modes that this monitor cannot display correctly. This may lead to an unusable display and/or damaged hardware.
OK
Cancel
Apply

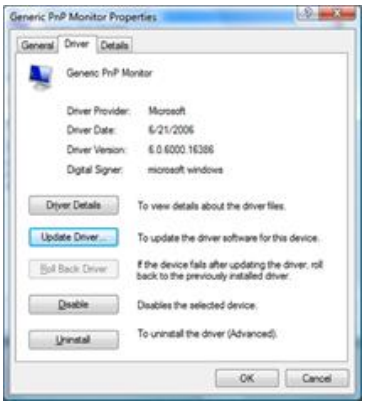
Note

This monitor driver is under certifying MS logo, and this installation doesn't damage your system.

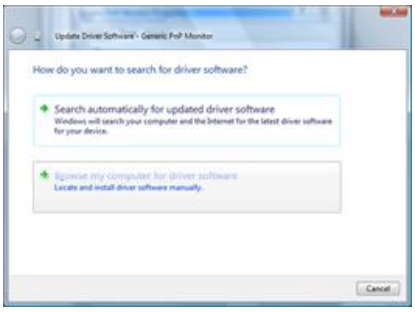
The certified driver will be posted on Samsung Monitor homepage.

6. Click "Update Driver..." in the "Driver" tab.





7. Check the "Browse my computer for driver software" checkbox and click "Let me pick from a list of device drivers on my computer".


How do you want to search for driver software?
Search automatically for updated driver software
Browse my computer for driver software
Locate and install driver software manually.
Cancel

Browse for driver software on your computer
Include subfolders
Browse...
Let me pick from a list of device drivers on my computer
Next
Cancel

8. Click "Have Disk..." and select the folder (for example, D:\Drive) where the driver setup file is located, and click "OK".

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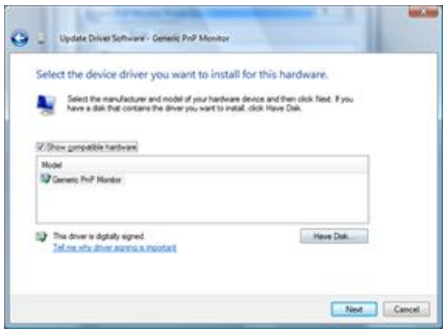
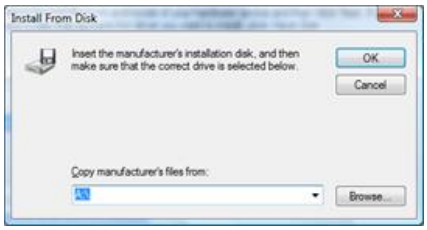
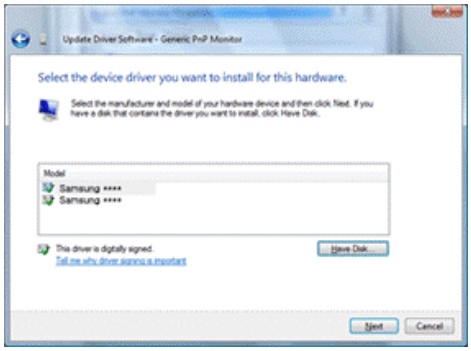
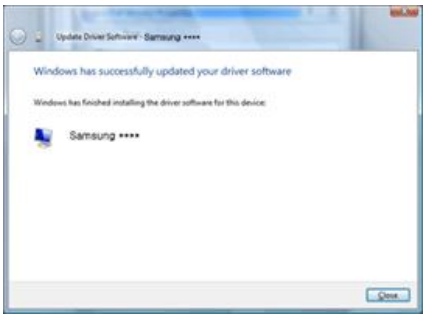

Update Driver Software - Generic PnP Monitor
Select the device driver you want to install for this hardware.
Have Disk...
Next
Cancel

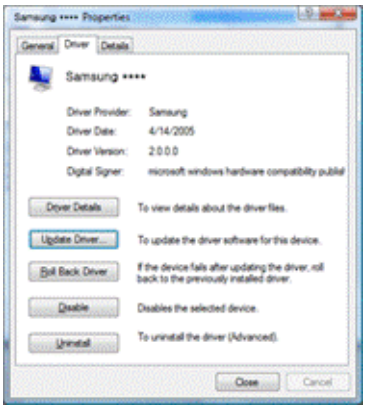

Install From Disk
Insert the manufacturer's installation disk, and then make sure that the correct drive is selected below.
OK
Cancel
Copy manufacturer's files from:
Browse...

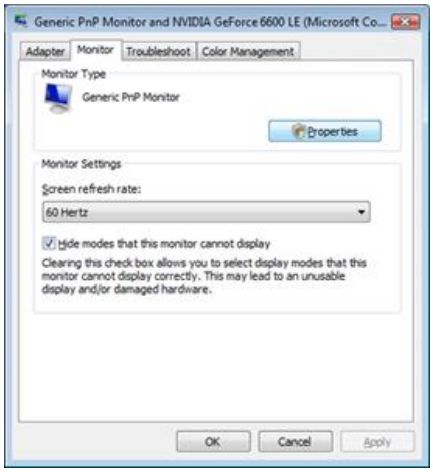
9. Select the model that matches your monitor from the list of monitor models on the screen, and click "Next".

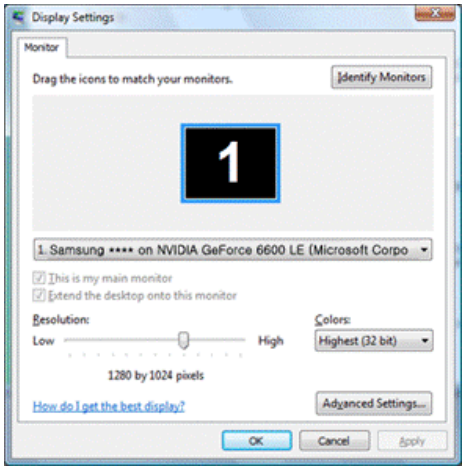


10. Click "Close" → "Close" → "OK" → "OK" on the following screens displayed in sequence.






Generic PnP Monitor and NVIDIA GeForce 6600 LE (Microsoft Co...
Adapter
Monitor
Troubleshoot
Color Management
Monitor Type
Generic PnP Monitor
Properties
Monitor Settings
Screen refresh rate:
60 Hertz
Hide modes that this monitor cannot display
Clearing this check box allows you to select display modes that this monitor cannot display correctly. This may lead to an unusable display and/or damaged hardware.
OK
Cancel
Apply

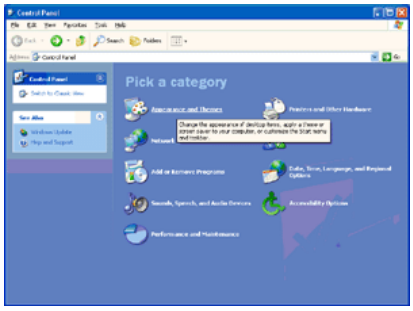


Microsoft® Windows® XP Operating System

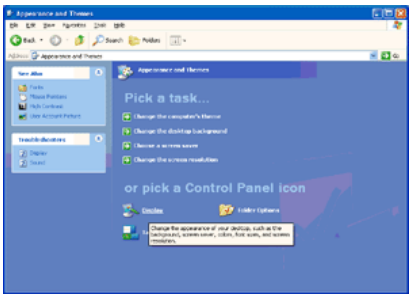
Downloaded from ManualMonitor.com Manuals

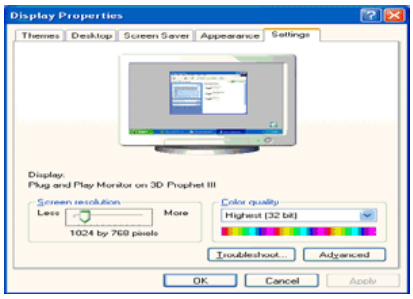
1. Insert CD into the CD-ROM drive.

2. Click "Start" → "Control Panel" then click the "Appearance and Themes" icon.

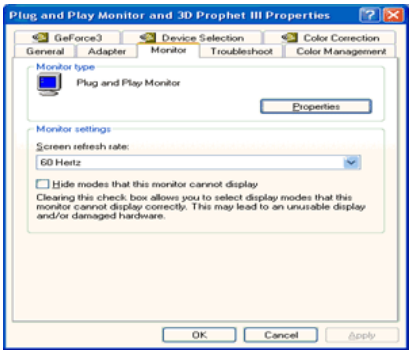


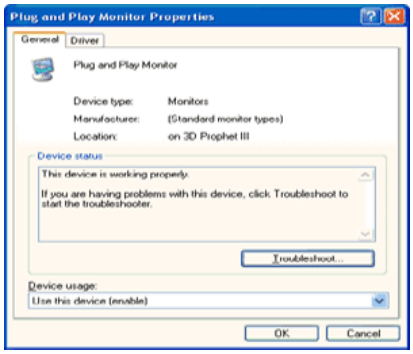
3. Click "Display" icon and choose the "Settings" tab then click "Advanced...".



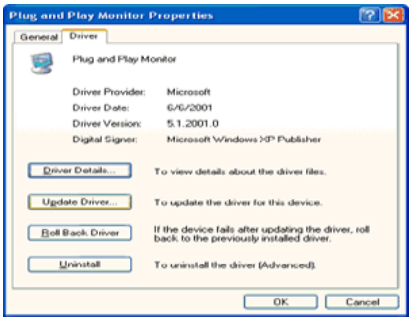


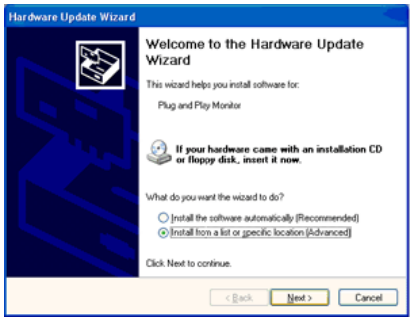
4. Click the "Properties" button on the "Monitor" tab and select "Driver" tab.





5. Click "Update Driver..." and select "Install from a list or..." then click "Next" button.




Hardware Update Wizard
Welcome to the Hardware Update Wizard
This wizard helps you install software for:
Plug and Play Monitor
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

6. Select "Don't search, I will..." then click "Next" and then click "Have disk".

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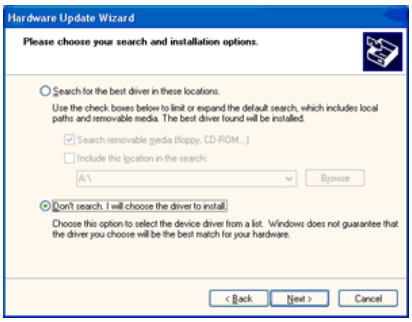
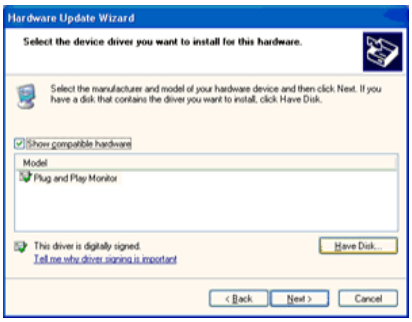
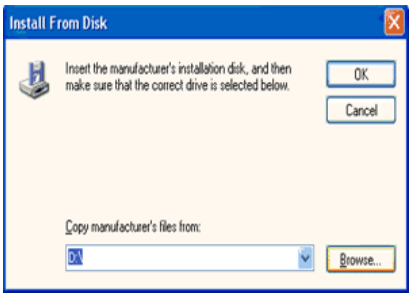
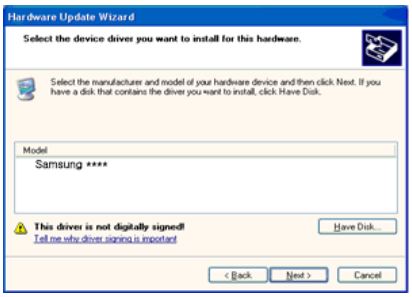

Hardware Update Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
A:\
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

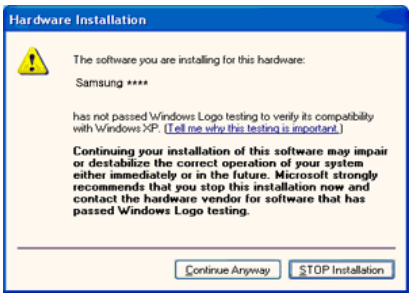

Hardware Update Wizard
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Show compatible hardware
Model
Plug and Play Monitor
This driver is digitally signed.
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel

7. Click the "Browse" button then choose A:(D:\Driver) and choose your monitor model in the model list and click the "Next" button.




Hardware Update Wizard
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Model
Samsung ****
This driver is not digitally signed!
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel

8. If you can see following message window, then click the "Continue Anyway" button. Then click "OK" button.


Hardware Installation
The software you are installing for this hardware:
Samsung ****
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

Note

This monitor driver is under certifying MS logo, and this installation doesn't damage your system.

The certified driver will be posted on Samsung Monitor homepage.

http://www.samsung.com/

9. Click the "Close" button then click "OK" button continually.

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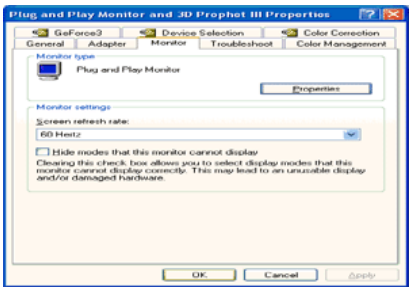

10. Monitor driver installation is completed.

Microsoft® Windows® 2000 Operating System

When you can see "Digital Signature Not Found" on your monitor, follow these steps.

1. Choose "OK" button on the "Insert disk" window.
2. Click the "Browse" button on the "File Needed" window.
3. Choose A:(D:\Driver) then click the "Open" button and then click "OK" button.

How to install

1. Click "Start", "Setting", "Control Panel".
2. Double click the "Display" icon.
3. Select the "Settings" tab and click "Advanced Properties" button.
4. Choose "Monitor".

   Case1 : If the "Properties" button is inactive, it means your monitor is properly configured. Please stop installation

   Case2 : If the "Properties" button is active, click the "Properties" button then follow next steps continually.
5. Click "Driver" and then click on "Update Driver..." then click on the "Next" button.
6. Choose "Display a list of the known drivers for this device so that I can choose a specific driver" then click "Next" and then click "Have disk".
7. Click the "Browse" button then choose A:(D:\Driver).
8. Click the "Open" button, then click "OK" button.
9. Choose your monitor model and click the "Next" button then click "Next" button.
10. Click the "Finish" button then the "Close" button.

    If you can see the "Digital Signature Not Found" window then click the "Yes" button. And click the "Finish" button then the "Close" button.

Microsoft® Windows® Millennium Operating System

1. Click "Start", "Setting", "Control Panel".
2. Double click the "Display" icon.
3. Select the "Settings" tab and click "Advanced Properties" button.

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4. Select the "Monitor" tab.
5. Click the "Change" button in the "Monitor Type" area.
6. Choose "Specify the location of the driver".
7. Choose "Display a list of all the driver in a specific location..." then click "Next" button.
8. Click the "Have Disk" button.
9. Specify A:\(D:\driver) then click "OK" button.
10. Select "Show all devices" and choose the monitor that corresponds to the one you connected to your computer and click "OK".
11. Continue choosing "Close" button and "OK" button until you close the Display Properties dialogue box.

Microsoft® Windows® NT Operating System

1. Click "Start", "Settings", "Control Panel", and then double-click "Display" icon.
2. In Display Registration Information window, click Settings Tab and then click "All Display Modes".
3. Select a mode that you wish to use (Resolution, Number of colors and Vertical frequency) and then click "OK".
4. Click "Apply" button if you see the screen working normally after clicking "Test". If the screen is not normal, change to a different mode (lower mode of resolution, colors or frequency).

Note

If there is no Mode at All Display Modes, select the level of resolution and vertical frequency by referring to the Preset Timing Modes in the user guide.

Linux Operating System

To execute X-Window, you need to make the X86Config file, which is a type of system setting file.

1. Press "Enter" at the first and the second screen after executing the X86Config file.
2. The third screen is for setting your mouse.
3. Set a mouse for your computer.
4. The next screen is for selecting a keyboard.
5. Set a Keyboard for your computer.
6. The next screen is for setting your monitor.
7. First of all, set a horizontal frequency for your monitor. (You can enter the frequency directly.)
8. Set a vertical frequency for your monitor. (You can enter the frequency directly.)
9. Enter the model name of your monitor. This information will not affect the actual execution of X-Window.
10. You have finished setting up your monitor. Execute X-Window after setting other requested hardware.

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Natural Color

Natural Color Software Program

One of the recent problems in using a computer is that the color of the images printed out by a printer or other images scanned by a scanner or a digital camera are not the same as those shown on the monitor. The Natural Color S/W is the very solution for this problem. It is a color administration system developed by Samsung Electronics in association with Korea Electronics & Telecommunications Research Institute (ETRI). This system is available only for Samsung monitors and makes the color of the images on the monitor the same as the printed or scanned images. For more information, refer to Help (F1) in the software program.

How to install the Natural Color software

Insert the CD included with the Samsung monitor into the CD-ROM Drive. Then, the initial screen of the program Natural Color will be executed. Click Natural Color on the initial screen to install the Natural Color software.

To install the program manually, insert the CD included with the Samsung monitor into the CD-ROM Drive, click the [Start] button of Windows and then select [Run...]. Enter D:\color\NCProSetup.exe and then press the [Enter] key. (If the drive where the CD is inserted is not D:\, enter the applicable drive.)

How to delete the Natural Color software program

Select "Setting/Control Panel" on the "Start" menu and then double-click "Add/Delete a program". Select Natural Color from the list and then click the "Add/Delete" button.

MagicTune™

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Installation

1. Insert the installation CD into the CD-ROM drive.
2. Click the MagicTune™ installation file.

   Note

   If the popup window to install the software for the main screen is not displayed, proceed with the installation using the MagicTune executable file on the CD.
3. Select installation Language, Click "Next".
4. When the Installation Shield Wizard window appears, click "Next".
5. Select "I agree to the terms of the license agreement" to accept the terms of use.
6. Choose a folder to install the MagicTune™ program.
7. Click "Install".
8. The "Installation Status" window appears.
9. Click "Finish".
10. When the installation is complete, the MagicTune™ executable icon appears on your desktop. Double-click the icon to start the program.

MagicTune™ execution icon may not appear depending on specification of computer system or monitor. If that happens, press F5 Key.

Installation Problems

The installation of MagicTune™ can be affected by such factors as the video card, motherboard and the network environment.

System Requirements

OS

- Windows 2000
- Windows XP Home Edition
- Windows XP Professional
- Windows Vista™

It is recommended using MagicTune™ in Windows® 2000 or later.

Hardware

- 32 MB Memory above
- 60 MB Hard disk space above

For more information, visit the MagicTune™ website.

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Uninstall

The MagicTune™ program can be removed only by using the "Add or Remove Programs" option of the Windows® Control Panel.

Perform the following steps remove MagicTune™.

1. Go to [Task Tray] → [Start] → [Settings] and select [Control Panel] in the menu. If the program runs on Windows® XP, go to [Control Panel] in the [Start] menu.
2. Click the "Add or Remove Programs" icon in Control Panel.
3. In the "Add or Remove Programs" screen, scroll down to find "MagicTune™." Click on it to highlight it.
4. Click the "Change/Remove" button to remove the program.
5. Click "Yes" to begin the uninstall process.
6. Wait until the "Uninstall Complete" dialog box appears.

Note

Visit the MagicTune™ website for technical support for MagicTune™, FAQs (questions and answers) and software upgrades.

The MagicTune™ program is an additional program for monitor products.
Some computing systems that install either an older or the latest video driver are not compatible with MagicTune™.
Please visit the MagicTune™ Website for technical support for MagicTune™.

Specifications subject to change without notice.
MagicTune™ is a trademark of SAMSUNG ELECTRONICS CO., Inc.
Windows™ is a registered trademark of Microsoft Corp.
Other trademarks are property of their respective holders.

MultiScreen

MultiScreen

Installation

1. Insert the installation CD into the CD-ROM drive.
2. Click the MultiScreen installation file.

   Note

   If the popup window to install the software for the main screen is not displayed, proceed with the installation using the MultiScreen executable file on the CD.
3. When the Installation Shield Wizard window appears, click "Next".
4. Select "I agree to the terms of the license agreement" to accept the terms of use.

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5. Choose a folder to install the MultiScreen, program.
6. Click "Install".
7. The "Installation Status" window appears.
8. Click "Finish".
9. When the installation is complete, the Multiscreen executable icon appears on your desktop. Double-click the icon to start the program.

Multiscreen execution icon may not appear depending on specification of computer system or monitor. If that happens, press F5 Key.

Installation Problems

The installation of MultiScreen can be affected by such factors as the video card, motherboard and the network environment.

System Requirements

OS

- Windows 2000
- Windows XP Home Edition
- Windows XP Professional
- Windows Vista™

It is recommended using MultiScreen in Windows® 2000 or later.

Hardware

- 32 MB Memory above
- 60 MB Hard disk space above

Uninstall

The Multiscreen program can be removed only by using the "Add or Remove Programs" option of the Windows® Control Panel.

Perform the following steps remove Multiscreen.

Select "Setting/Control Panel" on the "Start" menu and then double-click "Add/Delete a program".

Select Multiscreen from the list and then click the "Add/Delete" button.

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Adjusting the Monitor

{T190N,T190GN }

Direct Functions

AUTO

When the 'AUTO' button is pressed, the auto adjustment screen appears as shown in the animated screen on the center.

Auto adjustment allows the monitor to self-adjust to the incoming Analog signal. The values of **Fine**, **Coarse** and **Position** are adjusted automatically.

- If auto adjustment does not work properly, press 'AUTO' button again to adjust picture with more accuracy.

- If you change resolution in the control panel, auto function will be executed automatically.

OSD Lock & Unlock

When pressing the AUTO button after locking the OSD

When pressing the MENU button after locking the OSD

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This is the function that locks the OSD in order to keep the current states of settings or prevent others from adjusting the current settings.

Lock : Hold down the MENU button for more than five (5) seconds to activate the OSD adjustment lock function.

Unlock : Hold down the MENU button for more than five (5) seconds to deactivate the OSD adjustment lock function.

Note

Though the OSD adjustment lock function is activated, you can still adjust the brightness and contrast, and adjust **Customized Key** ( ) using the Direct button.

Customized key

You can customize key assignment for the Custom button according to your preferences.

To view the operating screen displayed when pressing the [ ] button after configuring the customized key for a function, click the name of each function.

(**MagicBright - MagicColor - Color Effect - Image Size**)

Note

You can configure the customized key for a required function via **Setup** > **Customized Key**.

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Brightness

When OSD is not on the screen, push the **Brightness** (☼) button to adjust brightness.

{T190N,T190GN }

OSD Function

	Picture	**Brightness**	**Contrast**	**Magic-Bright**		
	Color	**MagicCol-or**	**Color Tone**	**Color Con-trol**	**Color Effect**	**Gamma**
	Image	**Coarse**	**Fine**	**Sharpness**	**H-Position**	**V-Posi-tion**
	OSD	**Language**	**H-Position**	**V-Position**	**Transparen-cy**	**Display Time**
	Setup	**Reset**	**Customized Key**	**Image Size**	**LED Bright-ness**	**RTA**
	Informa-tion					

Picture

Brightness

(Not available in **MagicBright** mode of **Dynamic Contrast**.)

You can use the on-screen menus to change the brightness according to personal preference.

MENU → ↵ → ↵ → ▲ , ▼ → MENU

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Contrast

(Not available in **MagicBright** mode of **Dynamic Contrast**.)

You can use the on-screen menus to change the contrast according to personal preference.

(Not available in **MagicColor** mode of **Full** and **Intelligent**.)

MENU → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

MagicBright

Push the button to circle through available preconfigured modes.

MagicBright is a new feature providing optimum viewing environment depending on the contents of the image you are watching. Currently seven different modes are available: **Custom**, **Text**, **Internet**, **Game**, **Sport**, **Movie** and **Dynamic Contrast**. Each mode has its own pre-configured brightness value. You can easily select one of seven settings by simply pressing **Customized Key** control button.

- **Custom**

  Although the values are carefully chosen by our engineers, the pre-configured values may not be comfortable to your eyes depending on your taste.

  If this is the case, adjust the brightness and contrast by using the OSD menu.

- **Text**

  For documents or works involving heavy text.

- **Internet**

  For working with a mixture of images such as texts and graphics.

- **Game**

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For watching motion pictures such as a game.

- **Sport**

  For watching motion pictures such as a sport.

- **Movie**

  For watching motion pictures such as a DVD or Video CD.

- **Dynamic Contrast**

  Dynamic Contrast automatically detects the distribution of the visual signal and adjusts to create an optimum contrast.

MENU → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

Color

(Not available in **MagicBright** mode of **Dynamic Contrast**.)

MagicColor

MagicColor is a new technology that Samsung has exclusively developed to improve digital image and to display natural color more clearly without disturbing image quality.

- **Off** - Returns to the original mode.
- **Demo** - The screen before applying **MagicColor** appears on the right and the screen after applying **MagicColor** appears on the left.
- **Full** - Displays not only vivid natural color but also more realistic natural skin color with clearness.
- **Intelligent** - Displays vivid natural color with clearness.

MENU → ▲ , ▼ → ↵ →↵→ ▲ , ▼ → MENU

Color Tone

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The tone of the color can be changed and one of four modes can be selected.

- **Cool** - Makes whites bluish.
- **Normal** - Keeps whites white.
- **Warm** - Makes whites reddish.
- **Custom** - Select this mode when you want to adjust the image according to your preferences.

(Not available in **MagicColor** mode of **Full** and **Intelligent**.)

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

Color Control

Adjusts individual **Red**, **Green**, **Blue** color balance.

(Not available in **MagicColor** mode of **Full** and **Intelligent**.)

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

Color Effect

You can change the overall mood by changing the screen colors.

(Not available in **MagicColor** mode of **Full** and **Intelligent**.)

- **Off** - This applies an achromatic color to the screen to adjust the screen effects.
- **Grayscale** - The default colors of black and white are displayed.
- **Green** - This applies the green color effect to a black and white screen.
- **Aqua** - This applies the aqua color effect to a black and white screen.
- **Sepia** - This applies the Sepia color effect to a black and white screen.

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MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

Gamma

Gamma correction changes the luminance of the colors with intermediate luminance.

- **Mode 1**
- **Mode 2**
- **Mode 3**

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

Image

Coarse

Removes noise such as vertical stripes.

Coarse adjustment may move the screen image area. You may relocate it to the center using the horizontal control menu.

MENU → ▲ , ▼ → ↵ → ↵ → ▲ , ▼ → MENU

Fine

Removes noise such as horizontal stripes.

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If the noise persists even after **Fine** tuning, repeat it after adjusting the frequency (clock speed).

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

Sharpness

Changes the clearance of image.

(Not available in **MagicColor** mode of **Full** and **Intelligent**.)

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

H-Position

Changes the horizontal position of the monitor's entire display.

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

V-Position

Changes the vertical position of the monitor's entire display.

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

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OSD

Language

You can choose one of nine languages.

- English, Deutsch, Español, Français, Italiano, Svenska, Русский , Português , Türkçe

Note

The language chosen affects only the language of the OSD. It has no effect on any software running on the computer.

MENU → ▲ , ▼ → ↵ → ↵ → ▲ , ▼ → MENU

H-Position

You can change the horizontal position where the OSD menu appears on your monitor.

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

V-Position

You can change the vertical position where the OSD menu appears on your monitor.

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MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

Transparency

Change the transparency of the background of the OSD.

- **Off**
- **On**

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

Display Time

The menu will be automatically turned off if no adjustments are made for a certain time period.

You can set the amount of time the menu will wait before it is turned off.

- **5 sec**
- **10 sec**
- **20 sec**
- **200 sec**

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

Setup

Reset

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Reverts the product settings to factory defaults.

- **No**
- **Yes**

MENU → ▲, ▼ → ↵ → ▲, ▼ → ↵ → ↵ → ▲, ▼ → ↵

Customized Key

You can specify a function which will be activated when the **Customized Key** ( ) is pressed.

MENU → ▲, ▼ → ↵ → ▲, ▼ →↵ → ▲, ▼ →MENU

Image Size

You can change the size of the screen displayed on your monitor.

- **Auto** - The screen is displayed in accordance with the screen aspect ratio of the input signals.
- **Wide** - A full screen is displayed regardless of the screen aspect ratio of the input signals.

Note

- Signals not available in the standard mode table are not supported.
- If the wide screen which is the optimal resolution for the monitor is set on your PC, this function is not performed.

MENU → ▲, ▼ → ↵ → ▲, ▼ →↵ →▲, ▼ → MENU

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LED Brightness

Adjusts the brightness of the Power LED.

- **Off**
- **On**

MENU → ▲ , ▼ → ↵ → ▲ , ▼ →↵ →▲ , ▼ → MENU

RTA

RTA (Response Time Accelerator)

A function that accelerates the response speed of the panel so as to provide a sharper and more natural video display.

- **Off** - Deactivates the **RTA** function so that the panel operates at its original response speed.
- **Mode 1** - This mode is the optimal mode for watching movies.
- **Mode 2** - This mode is the optimal mode for still screens, such as using a word processor or surfing the internet.

MENU → ▲ , ▼ → ↵ → ▲ , ▼ →↵ →▲ , ▼ → MENU

Note

- If you are not watching a movie, we recommend setting the mode to **RTA Mode 2** or **Off**.

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Information

Shows a video source, display mode on the OSD screen.

MENU → ▲ , ▼ →MENU

{T200N,T200GN,T220N,T220GN }

Direct Functions

AUTO

When the 'AUTO' button is pressed, the auto adjustment screen appears as shown in the animated screen on the center.

Auto adjustment allows the monitor to self-adjust to the incoming Analog signal. The values of **Fine**, **Coarse** and **Position** are adjusted automatically.

- If auto adjustment does not work properly, press 'AUTO' button again to adjust picture with more accuracy.

- If you change resolution in the control panel, auto function will be executed automatically.

OSD Lock & Unlock

When pressing the AUTO button after locking the OSD

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When pressing the MENU button after locking the OSD

This is the function that locks the OSD in order to keep the current states of settings or prevent others from adjusting the current settings.

Lock : Hold down the MENU button for more than five (5) seconds to activate the OSD adjustment lock function.

Unlock : Hold down the MENU button for more than five (5) seconds to deactivate the OSD adjustment lock function.

Note

Though the OSD adjustment lock function is activated, you can still adjust the brightness and contrast, and adjust **Customized Key** ( ) using the Direct button.

Customized key

You can customize key assignment for the Custom button according to your preferences.

To view the operating screen displayed when pressing the [ ] button after configuring the customized key for a function, click the name of each function.

(**MagicBright** - **MagicColor** - **Color Effect** - **Image Size**)

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Note

You can configure the customized key for a required function via **Setup** > **Customized Key**.

Brightness

When OSD is not on the screen, push the **Brightness** ( ) button to adjust brightness.

{T200N,T200GN,T220N,T220GN }

OSD Function

Picture	**Brightness**	**Contrast**	**Magic-Bright**		
Color	**MagicCol-or**	**Color Tone**	**Color Con-trol**	**Color Effect**	**Gamma**
Image	**Coarse**	**Fine**	**Sharpness**	**H-Position**	**V-Posi-tion**
OSD	**Language**	**H-Position**	**V-Position**	**Transparen-cy**	**Display Time**
Setup	**Reset**	**Customized Key**	**Image Size**	**LED Bright-ness**	**RTA**
Informa-tion					

Picture

Brightness

(Not available in **MagicBright** mode of **Dynamic Contrast**.)

You can use the on-screen menus to change the brightness according to personal preference.

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MENU → ↵ → ↵ → ▲ , ▼ → MENU

Contrast

(Not available in **MagicBright** mode of **Dynamic Contrast**.)

You can use the on-screen menus to change the contrast according to personal preference.

(Not available in **MagicColor** mode of **Full** and **Intelligent**.)

MENU → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

MagicBright

Push the button to circle through available preconfigured modes.

MagicBright is a new feature providing optimum viewing environment depending on the contents of the image you are watching. Currently seven different modes are available: **Custom**, **Text**, **Internet**, **Game**, **Sport**, **Movie** and **Dynamic Contrast**. Each mode has its own pre-configured brightness value. You can easily select one of seven settings by simply pressing **Customized Key** control button.

- **Custom**

  Although the values are carefully chosen by our engineers, the pre-configured values may not be comfortable to your eyes depending on your taste.

  If this is the case, adjust the brightness and contrast by using the OSD menu.

- **Text**

  For documents or works involving heavy text.

- **Internet**

  For working with a mixture of images such as texts and graphics.

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- **Game**

  For watching motion pictures such as a game.

- **Sport**

  For watching motion pictures such as a sport.

- **Movie**

  For watching motion pictures such as a DVD or Video CD.

- **Dynamic Contrast**

  Dynamic Contrast automatically detects the distribution of the visual signal and adjusts to create an optimum contrast.

MENU → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

Color

(Not available in **MagicBright** mode of **Dynamic Contrast**.)

MagicColor

MagicColor is a new technology that Samsung has exclusively developed to improve digital image and to display natural color more clearly without disturbing image quality.

- **Off** - Returns to the original mode.
- **Demo** - The screen before applying **MagicColor** appears on the right and the screen after applying **MagicColor** appears on the left.
- **Full** - Displays not only vivid natural color but also more realistic natural skin color with clearness.
- **Intelligent** - Displays vivid natural color with clearness.

MENU → ▲ , ▼ → ↵ →↵→ ▲ , ▼ → MENU

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Color Tone

The tone of the color can be changed and one of four modes can be selected.

- **Cool** - Makes whites bluish.
- **Normal** - Keeps whites white.
- **Warm** - Makes whites reddish.
- **Custom** - Select this mode when you want to adjust the image according to your preferences.

(Not available in **MagicColor** mode of **Full** and **Intelligent**.)

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

Color Control

Adjusts individual **Red**, **Green**, **Blue** color balance.

(Not available in **MagicColor** mode of **Full** and **Intelligent**.)

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

Color Effect

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You can change the overall mood by changing the screen colors.

(Not available in **MagicColor** mode of **Full** and **Intelligent**.)

- **Off** - This applies an achromatic color to the screen to adjust the screen effects.
- **Grayscale** - The default colors of black and white are displayed.
- **Green** - This applies the green color effect to a black and white screen.
- **Aqua** - This applies the aqua color effect to a black and white screen.
- **Sepia** - This applies the Sepia color effect to a black and white screen.

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

Gamma

Gamma correction changes the luminance of the colors with intermediate luminance.

- **Mode 1**
- **Mode 2**
- **Mode 3**

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

Image

Coarse

Removes noise such as vertical stripes.

Coarse adjustment may move the screen image area. You may relocate it to the center using the horizontal control menu.

MENU → ▲ , ▼ → ↵ → ↵ → ▲ , ▼ → MENU

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Fine

Removes noise such as horizontal stripes.

If the noise persists even after **Fine** tuning, repeat it after adjusting the frequency (clock speed).

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

Sharpness

Changes the clearance of image.

(Not available in **MagicColor** mode of **Full** and **Intelligent**.)

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

H-Position

Changes the horizontal position of the monitor's entire display.

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

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V-Position

Changes the vertical position of the monitor's entire display.

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

OSD

Language

You can choose one of nine languages.

- English, Deutsch, Español, Français, Italiano, Svenska, Русский , Português , Türkçe

Note

The language chosen affects only the language of the OSD. It has no effect on any software running on the computer.

MENU → ▲ , ▼ → ↵ → ↵ → ▲ , ▼ → MENU

H-Position

You can change the horizontal position where the OSD menu appears on your monitor.

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MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

V-Position

You can change the vertical position where the OSD menu appears on your monitor.

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

Transparency

Change the transparency of the background of the OSD.

- **Off**
- **On**

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

Display Time

The menu will be automatically turned off if no adjustments are made for a certain time period.

You can set the amount of time the menu will wait before it is turned off.

- **5 sec**
- **10 sec**
- **20 sec**
- **200 sec**

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MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ▲ , ▼ → MENU

Setup

Reset

Reverts the product settings to factory defaults.

- **No**
- **Yes**

MENU → ▲ , ▼ → ↵ → ▲ , ▼ → ↵ → ↵ → ▲ , ▼ → ↵

Customized Key

You can specify a function which will be activated when the **Customized Key** ( ) is pressed.

MENU → ▲ , ▼ → ↵ → ▲ , ▼ →↵ → ▲ , ▼ →MENU

Image Size

You can change the size of the screen displayed on your monitor.

- **Auto** - The screen is displayed in accordance with the screen aspect ratio of the input signals.

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- **Wide -** A full screen is displayed regardless of the screen aspect ratio of the input signals.

Note

- Signals not available in the standard mode table are not supported.
- If the wide screen which is the optimal resolution for the monitor is set on your PC, this function is not performed.

MENU → ▲ , ▼ → ↵ → ▲ , ▼ →↵ →▲ , ▼ → MENU

LED Brightness

Adjusts the brightness of the Power LED.

- **Off**
- **On**

MENU → ▲ , ▼ → ↵ → ▲ , ▼ →↵ →▲ , ▼ → MENU

RTA

RTA (Response Time Accelerator)

A function that accelerates the response speed of the panel so as to provide a sharper and more natural video display.

- **Off -** Deactivates the **RTA** function so that the panel operates at its original response speed.
- **Mode 1 -** This mode is the optimal mode for watching movies.
- **Mode 2 -** This mode is the optimal mode for still screens, such as using a word processor or surfing the internet.

MENU → ▲ , ▼ → ↵ → ▲ , ▼ →↵ →▲ , ▼ → MENU

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Note

- If you are not watching a movie, we recommend setting the mode to **RTA Mode 2** or **Off**.

Information

Shows a video source, display mode on the OSD screen.

MENU → ▲ , ▼ →MENU

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Troubleshooting

{T190N,T190GN }

Self-Test Feature Check

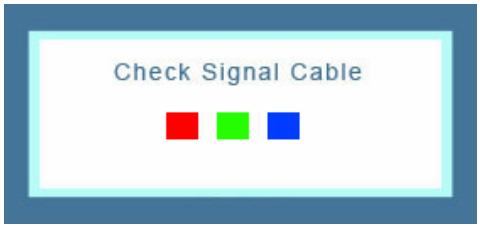
Note

Your monitor provides a self test feature that allows you to check whether your monitor is functioning properly.

Self-Test Feature Check

1. Turn off both your computer and the monitor.
2. Unplug the video cable from the back of the computer.
3. Turn on the monitor.

   If the monitor is functioning properly, you will see a box in the illustration below.



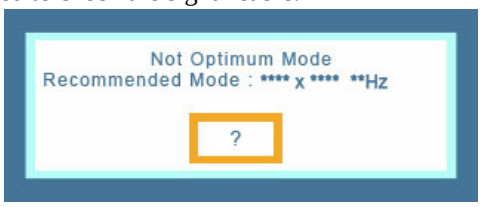
   This box appears during normal operation if the video cable becomes disconnected or damaged.

4. Turn off your monitor and reconnect the video cable; then turn on both your computer and the monitor.

If your monitor screen remains blank after using the previous procedure, check your video controller and computer system; *your monitor is functioning properly.*

Warning Messages

If there is something wrong with the input signal, a message appears on the screen or the screen goes blank although the power indicator LED is still on. The message may indicate that the monitor is out of scan range or that you need to check the signal cable.



Environment

The location and the position of the monitor may influence the quality and other features of the monitor.

If there are any sub woofer speakers near the monitor, unplug and relocate the woofer to another room.

Remove all electronic devices such as radios, fans, clocks and telephones that are within 3 feet (one meter) of the monitor.

Useful Tips

A monitor recreates visual signals received from the computer. Therefore, if there is a problem with the computer or the video card, this can cause the monitor to become blank, have poor coloring, become

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noisy, and video mode not supported, etc. In this case, first check the source of the problem, and then contact the Service Center or your dealer.

Judging the monitor's working condition

If there is no image on the screen or a "**Not Optimum Mode**", "**Recommended Mode** 1440 x 900 60 Hz" message comes up, disconnect the cable from the computer while the monitor is still powered on.

If there is a message coming up on the screen or if the screen goes white, this means the monitor is in working condition.

In this case, check the computer for trouble.

{T190N,T190GN }

Check List

Note

Before calling for assistance, check the information in this section to see if you can remedy any problems yourself. If you do need assistance, please call the phone number on the Information section or contact your dealer.

No images on the screen. I cannot turn on the monitor.

Q: Is the power cord connected properly?

A: Check the power cord connection and supply.

Q: Can you see "**Check Signal Cable**" on the screen?

A: (Connected using the D-sub cable)

Check the signal cable connection.

Q: If the power is on, reboot the computer to see the initial screen (the login screen), which can be seen.

A: If the initial screen (the login screen) appears, boot the computer in the applicable mode (the safe mode for Windows ME/XP/2000) and then change the frequency of the video card.

(Refer to the Preset Timing Modes)

If the initial screen (the login screen) does not appear, contact the Service Center or your dealer.

Q: Can you see "**Not Optimum Mode**", "**Recommended Mode** 1440 x 900 60 Hz" on the screen?

A: You can see this message when the signal from the video card exceeds the maximum resolution and frequency that the monitor can handle properly.

A: Adjust the maximum resolution and frequency that the monitor can handle properly.

A: If the display exceeds SXGA or 75 Hz, a "**Not Optimum Mode**", "**Recommended Mode** 1440 x 900 60 Hz" message is displayed. If the display exceeds 85 Hz, the display will work properly but the "**Not Optimum Mode**", "**Recommended Mode** 1440 x 900 60 Hz" message appears for one minute and then disappears.

Please change to the recommended mode during this one-minute period.

(The message is displayed again if the system is rebooted.)

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Q: There is no image on the screen. Is the power indicator on the monitor blinking at 1 second intervals?

A: The monitor is in PowerSaver mode.

A: Press a key on the keyboard to activate the monitor and restore the image on the screen.

A: If there is still no image, press the '↵' button. Then press any key on the keyboard again to activate the monitor and restore the image on the screen.

I cannot see the On Screen Display.

Q: Have you locked the On Screen Display (OSD) Menu to prevent changes?

A: Unlock the OSD by pressing the [MENU/ ▥] button for at least 5 seconds.

The screen shows strange colors or just black and white.

Q: Is the screen displaying only one color as if looking at the screen through a cellophane paper?

A: Check the signal cable connection.

A: Make sure the video card is fully inserted in its slot.

Q: Have the screen colors become strange after running a program or due to a crash between applications?

A: Reboot the computer.

Q: Has the video card been set properly?

A: Set the video card by referring to the video card manual.

The screen suddenly has become unbalanced.

Q: Have you changed the video card or the driver?

A: Adjust screen image position and size using the OSD.

Q: Have you adjusted the resolution or frequency to the monitor?

A: Adjust the resolution and frequency at the video card.

(Refer to the Preset Timing Modes).

Q: The screen can be unbalanced due to the cycle of the video card signals. Readjust Position by referring to the OSD.

The screen is out of focus or OSD cannot be adjusted.

Q: Have you adjusted the resolution or frequency on the monitor?

A: Adjust the resolution and frequency of the video card.

(Refer to the Preset Timing Modes).

LED is blinking but no images on the screen.

Q: Is the frequency properly adjusted when checking the Display Timing on the menu?

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A: Adjust the frequency properly by referring to the video card manual and the Preset Timing Modes.

(The maximum frequency per resolution may differ from product to product.)

There are only 16 colors shown on the screen. The screen colors have changed after changing

Q: Have the Windows colors been set properly?

A: Windows XP :

Set the resolution at the Control Panel → Appearance and Themes → Display → Settings.

A: Windows ME/2000 :

Set the resolution at the Control Panel → Display → Settings.

Q: Has the video card been set properly?

A: Set the video card by referring to the video card manual.

There is a message that reads "Unrecognized monitor, Plug & Play (VESA DDC) monitor found"

Q: Have you installed the monitor driver?

A: Install the monitor driver according to the Driver Installation Instructions.

Q: See the video card manual to see if the Plug & Play (VESA DDC) function can be supported.

A: Install the monitor driver according to the Driver Installation Instructions.

Check when MagicTune™ does not function properly.

Q: MagicTune™ feature is found only on PC (VGA) with Window OS that supports Plug and Play.

A: To check whether your PC is available for MagicTune™ feature, follow the steps below (When Windows is XP);

Control Panel → Performance and Maintenance → System → Hardware → Device Manager → Monitors → After deleting Plug and Play monitor, find 'Plug and Play monitor' by searching new Hardware.

A: MagicTune™ is an additional software for the monitor. Some graphic cards may not support your monitor. When you have a problem with the graphic card, visit our website to check the compatible graphic card list provided.

http://www.samsung.com/monitor/magictune

MagicTune™ doesn't work properly.

Q: Have you changed your PC or video graphic card?

A: Download the latest program. The program can be downloaded http://www.samsung.com/monitor/magictune

Q: Did you install the program?

A: Reboot the computer after installing the program for the first time. If a copy of the program is already installed, remove it, reboot the computer, and then install the program again. You need to reboot the computer for it to operate normally after installing or removing the program.

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Note

Visit the MagicTune™ website and download the installation software for MagicTune™ MAC.

You may see small particles if you look closely at the edge of the bezel surrounding the produc

This is part of the product's design and is not a defect.

Check the following items if there is trouble with the monitor.

Check if the power cord and the video cables are properly connected to the computer.

Check if the computer beeps more than 3 times when booting.

(If it does, request an a service for the main board of the computer.)

If you installed a new video card or if you assembled the PC, check if the installed the adapter(video) driver and the monitor driver.

Check if the scanning ratio of the video screen is set to between 56 Hz ~ 75 Hz.

(Do not exceed 75 Hz when using the maximum resolution.)

If you have problems in installing the adapter (video) driver, boot the computer in Safe Mode, remove the Display Adapter in the "Control Panel → System → Device Administrator" and then reboot the computer to reinstall the adapter (video) driver.

Note

If problems repeatedly occur, contact an authorized service center.

{T190N,T190GN }

Q & A

Q: How can I change the frequency?

A: The frequency can be changed by reconfiguring the video card.

A: Note that video card support can vary, depending on the version of the driver used. (Refer to the computer or the video card manual for details.)

Q: How can I adjusts the resolution?

A: Windows XP:

Set the resolution in the Control Panel → Appearance and Themes → Display → Settings.

A: Windows ME/2000:

Set the resolution in the Control Panel → Display → Settings.

* Contact the video card manufacturer for details.

Q: How can I set the Power Saving function?

A: Windows XP:

Set the resolution in the Control Panel → Appearance and Themes → Display → Screen Saver.

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Set the function in the BIOS-SETUP of the computer. (Refer to the Windows / Computer Manual).

A: Windows ME/2000:

Set the resolution at the Control Panel → Display → Screen Saver.

Set the function in the BIOS-SETUP of the computer. (Refer to the Windows / Computer Manual).

Q: How can I clean the outer case/LCD Panel?

A: Disconnect the power cord and then clean the monitor with a soft cloth, using either a cleaning solution or plain water.

Do not leave any detergent or scratches on the case. Do not let any water enter the monitor.

Note

Before calling for assistance, check the information in this section to see if you can remedy any problems yourself. If you do need assistance, please call the phone number on the Information section or contact your dealer.

{T200N,T200GN,T220N,T220GN }

Self-Test Feature Check

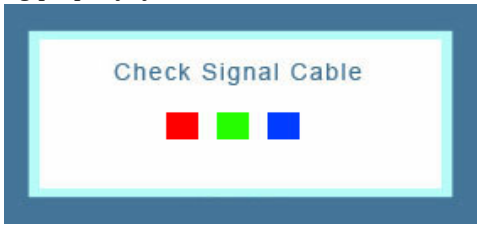
Note

Your monitor provides a self test feature that allows you to check whether your monitor is functioning properly.

Self-Test Feature Check

1. Turn off both your computer and the monitor.
2. Unplug the video cable from the back of the computer.
3. Turn on the monitor.

   If the monitor is functioning properly, you will see a box in the illustration below.



   This box appears during normal operation if the video cable becomes disconnected or damaged.

4. Turn off your monitor and reconnect the video cable; then turn on both your computer and the monitor.

If your monitor screen remains blank after using the previous procedure, check your video controller and computer system; *your monitor is functioning properly.*

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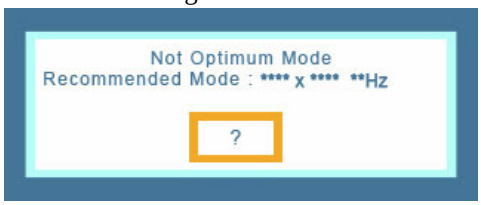
Warning Messages

If there is something wrong with the input signal, a message appears on the screen or the screen goes blank although the power indicator LED is still on. The message may indicate that the monitor is out of scan range or that you need to check the signal cable.



Environment

The location and the position of the monitor may influence the quality and other features of the monitor.

If there are any sub woofer speakers near the monitor, unplug and relocate the woofer to another room.

Remove all electronic devices such as radios, fans, clocks and telephones that are within 3 feet (one meter) of the monitor.

Useful Tips

A monitor recreates visual signals received from the computer. Therefore, if there is a problem with the computer or the video card, this can cause the monitor to become blank, have poor coloring, become noisy, and video mode not supported, etc. In this case, first check the source of the problem, and then contact the Service Center or your dealer.

Judging the monitor's working condition

If there is no image on the screen or a "**Not Optimum Mode**", "**Recommended Mode** 1680 x 1050 60 Hz" message comes up, disconnect the cable from the computer while the monitor is still powered on.

If there is a message coming up on the screen or if the screen goes white, this means the monitor is in working condition.

In this case, check the computer for trouble.

{T200N,T200GN,T220N,T220GN }

Check List

Note

Before calling for assistance, check the information in this section to see if you can remedy any problems yourself. If you do need assistance, please call the phone number on the Information section or contact your dealer.

No images on the screen. I cannot turn on the monitor.

Q: Is the power cord connected properly?

A: Check the power cord connection and supply.

Q: Can you see "**Check Signal Cable**" on the screen?

A: (Connected using the D-sub cable)

Check the signal cable connection.

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Q: If the power is on, reboot the computer to see the initial screen (the login screen), which can be seen.

A: If the initial screen (the login screen) appears, boot the computer in the applicable mode (the safe mode for Windows ME/XP/2000) and then change the frequency of the video card.

(Refer to the Preset Timing Modes)

If the initial screen (the login screen) does not appear, contact the Service Center or your dealer.

Q: Can you see "**Not Optimum Mode**", "**Recommended Mode** 1680 x 1050 60 Hz" on the screen?

A: You can see this message when the signal from the video card exceeds the maximum resolution and frequency that the monitor can handle properly.

A: Adjust the maximum resolution and frequency that the monitor can handle properly.

A: If the display exceeds SXGA or 75 Hz, a "**Not Optimum Mode**", "**Recommended Mode** 1680 x 1050 60 Hz" message is displayed. If the display exceeds 85 Hz, the display will work properly but the "**Not Optimum Mode**", "**Recommended Mode** 1680 x 1050 60 Hz" message appears for one minute and then disappears.

Please change to the recommended mode during this one-minute period.

(The message is displayed again if the system is rebooted.)

Q: There is no image on the screen. Is the power indicator on the monitor blinking at 1 second intervals?

A: The monitor is in PowerSaver mode.

A: Press a key on the keyboard to activate the monitor and restore the image on the screen.

A: If there is still no image, press the '↵' button. Then press any key on the keyboard again to activate the monitor and restore the image on the screen.

I cannot see the On Screen Display.

Q: Have you locked the On Screen Display (OSD) Menu to prevent changes?

A: Unlock the OSD by pressing the [MENU/ ▥] button for at least 5 seconds.

The screen shows strange colors or just black and white.

Q: Is the screen displaying only one color as if looking at the screen through a cellophane paper?

A: Check the signal cable connection.

A: Make sure the video card is fully inserted in its slot.

Q: Have the screen colors become strange after running a program or due to a crash between applications?

A: Reboot the computer.

Q: Has the video card been set properly?

A: Set the video card by referring to the video card manual.

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The screen suddenly has become unbalanced.

Q: Have you changed the video card or the driver?

A: Adjust screen image position and size using the OSD.

Q: Have you adjusted the resolution or frequency to the monitor?

A: Adjust the resolution and frequency at the video card.

(Refer to the Preset Timing Modes).

Q: The screen can be unbalanced due to the cycle of the video card signals. Readjust Position by referring to the OSD.

The screen is out of focus or OSD cannot be adjusted.

Q: Have you adjusted the resolution or frequency on the monitor?

A: Adjust the resolution and frequency of the video card.

(Refer to the Preset Timing Modes).

LED is blinking but no images on the screen.

Q: Is the frequency properly adjusted when checking the Display Timing on the menu?

A: Adjust the frequency properly by referring to the video card manual and the Preset Timing Modes.

(The maximum frequency per resolution may differ from product to product.)

There are only 16 colors shown on the screen. The screen colors have changed after changing

Q: Have the Windows colors been set properly?

A: Windows XP :

Set the resolution at the Control Panel → Appearance and Themes → Display → Settings.

A: Windows ME/2000 :

Set the resolution at the Control Panel → Display → Settings.

Q: Has the video card been set properly?

A: Set the video card by referring to the video card manual.

There is a message that reads "Unrecognized monitor, Plug & Play (VESA DDC) monitor found"

Q: Have you installed the monitor driver?

A: Install the monitor driver according to the Driver Installation Instructions.

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Check when MagicTune™ does not function properly.

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A: To check whether your PC is available for MagicTune™ feature, follow the steps below (When Windows is XP);

Control Panel → Performance and Maintenance → System → Hardware → Device Manager → Monitors → After deleting Plug and Play monitor, find 'Plug and Play monitor' by searching new Hardware.

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If you installed a new video card or if you assembled the PC, check if the installed the adapter(video) driver and the monitor driver.

Check if the scanning ratio of the video screen is set to between 56 Hz ~ 75 Hz.

(Do not exceed 75 Hz when using the maximum resolution.)

If you have problems in installing the adapter (video) driver, boot the computer in Safe Mode, remove the Display Adapter in the "Control Panel → System → Device Administrator" and then reboot the computer to reinstall the adapter (video) driver.

Note

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{T200N,T200GN,T220N,T220GN }

Q & A

Q: How can I change the frequency?

A: The frequency can be changed by reconfiguring the video card.

A: Note that video card support can vary, depending on the version of the driver used. (Refer to the computer or the video card manual for details.)

Q: How can I adjusts the resolution?

A: Windows XP:

Set the resolution in the Control Panel → Appearance and Themes → Display → Settings.

A: Windows ME/2000:

Set the resolution in the Control Panel → Display → Settings.

* Contact the video card manufacturer for details.

Q: How can I set the Power Saving function?

A: Windows XP:

Set the resolution in the Control Panel → Appearance and Themes → Display → Screen Saver.

Set the function in the BIOS-SETUP of the computer. (Refer to the Windows / Computer Manual).

A: Windows ME/2000:

Set the resolution at the Control Panel → Display → Screen Saver.

Set the function in the BIOS-SETUP of the computer. (Refer to the Windows / Computer Manual).

Q: How can I clean the outer case/LCD Panel?

A: Disconnect the power cord and then clean the monitor with a soft cloth, using either a cleaning solution or plain water.

Do not leave any detergent or scratches on the case. Do not let any water enter the monitor.

Note

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Specifications

General

General	
Model Name	SyncMaster T190N

LCD Panel	
Size	19 inch (48 cm)
Display area	408.24mm (H) x 255.15 mm (V)
Pixel Pitch	0.2835 mm (H) x 0.2835 mm (V)

Synchronization	
Horizontal	30 ~ 81 kHz
Vertical	56 ~ 75 Hz

Display Color

16.7M

Resolution	
Optimum resolution	1440 x 900 @ 60 Hz
Maximum resolution	1440 x 900 @ 75 Hz

Input Signal, Terminated

RGB Analog

0.7 Vp-p ± 5 %

Separate H/V sync, Composite, SOG

TTL level (V high ≥ 2.0 V, V low ≤ 0.8 V)

Maximum Pixel Clock

137 MHz (Analog)

Power Supply

AC 100 - 240 V~ (+/- 10 %), 50/60 Hz ± 3 Hz

Signal Cable

15pin - to - 15pin D-sub cable, Detachable

Dimensions (W x H x D) / Weight

454.5 x 331.5 x 75 mm / 17.9 x 13.1 x 3.0 inch (Without Stand)

454.5 x 400 x 195 mm / 17.9 x 15.7 x 7.7 inch (With Stand) / 4.6 kg / 10.1 Ibs

Environmental considerations	
Operating	Temperature : 50 °F ~ 104 °F (10 °C ~ 40 °C) Humidity : 10 % ~ 80 %, non-condensing

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Environmental considerations

Storage	Temperature : -4 °F ~ 113 °F (-20 °C ~ 45 °C)
	Humidity : 5 % ~ 95 %, non-condensing

Plug and Play Capability

This monitor can be installed on any Plug & Play compatible system. The interaction of the monitor and the computer systems will provide the best operating conditions and monitor settings. In most cases, the monitor installation will proceed automatically, unless the user wishes to select alternate settings.

Dot Acceptable

TFT-LCD panels manufactured by using advanced semiconductor technology with precision of 1ppm (one millionth) above are used for this product. But the pixels of RED, GREEN, BLUE and WHITE color appear to be bright sometimes or some black pixels may be seen. This is not from bad quality and you can use it without any problems.

For example, the number of TFT-LCD sub pixels contained in this product are 3,888,000.

Note

Design and specifications are subject to change without prior notice.

Class B Equipment (Information Communication equipment for residential use)

This product complies with the Electromagnetic Compatibility Directives for residential use and can be used in all areas including common residential areas. (Class B equipment emits less electromagnetic waves than Class A equipment.)

PowerSaver

This monitor has a built-in power management system called PowerSaver. This system saves energy by switching your monitor to low-power mode when it has not been used for a certain amount of time. The monitor automatically returns to normal operation when you press a key on the keyboard. For energy conservation, turn your monitor OFF when it is not needed, or when leaving it unattended for long periods. The PowerSaver system operates with a VESA DPM compliant video card installed in your computer. Use the software utility installed on your computer to set up this feature.

State	Normal Operation	Power saving mode	Power off (Power button) EPA/ENERGY 2000
Power Indicator	On	Blinking	Off
Power Consumption	34 watts	Less than1 watts	0.3 watts

This monitor is EPA ENERGY STAR® compliant and ENERGY2000 compliant when used with a computer equipped with VESA DPM functionality.

As an ENERGY STAR® Partner, SAMSUNG has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

Preset Timing Modes

If the signal transferred from the computer is the same as the following Preset Timing Modes, the screen will be adjusted automatically. However, if the signal differs, the screen may go blank while the power LED is on. Refer to the video card manual and adjusts the screen as follows.

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Display Mode	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
IBM, 640 x 350	31.469	70.086	25.175	+/-
IBM, 640 x 480	31.469	59.940	25.175	-/-
IBM, 720 x 400	31.469	70.087	28.322	-/+
MAC, 640 x 480	35.000	66.667	30.240	-/-
MAC, 832 x 624	49.726	74.551	57.284	-/-
MAC, 1152 x 870	68.681	75.062	100.000	-/-
VESA, 640 x 480	37.861	72.809	31.500	-/-
VESA, 640 x 480	37.500	75.000	31.500	-/-
VESA, 800 x 600	35.156	56.250	36.000	+/+
VESA, 800 x 600	37.879	60.317	40.000	+/+
VESA, 800 x 600	48.077	72.188	50.000	+/+
VESA, 800 x 600	46.875	75.000	49.500	+/+
VESA, 1024 x 768	48.363	60.004	65.000	-/-
VESA, 1024 x 768	56.476	70.069	75.000	-/-
VESA, 1024 x 768	60.023	75.029	78.750	+/+
VESA, 1152 x 864	67.500	75.000	108.000	+/+
VESA, 1280 X 960	60.000	60.000	108.000	+/+
VESA, 1280 X 1024	63.981	60.020	108.000	+/+
VESA, 1280 X 1024	79.976	75.025	135.000	+/+
VESA, 1440 x 900	55.935	59.887	106.500	-/+
VESA, 1440 x 900	70.635	74.984	136.750	-/+

Horizontal Frequency

The time to scan one line connecting the right edge to the left edge of the screen horizontally is called the Horizontal Cycle and the inverse number of the Horizontal Cycle is called the Horizontal Frequency. Unit: kHz

Vertical Frequency

Like a fluorescent lamp, the screen has to repeat the same image many times per second to display an image to the user. The frequency of this repetition is called the Vertical Frequency or Refresh Rate. Unit: Hz

General

General	
Model Name	SyncMaster T190GN

LCD Panel	
Size	19 inch (48 cm)
Display area	408.24mm (H) x 255.15 mm (V)
Pixel Pitch	0.2835 mm (H) x 0.2835 mm (V)

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Synchronization

Horizontal	30 ~ 81 kHz
Vertical	56 ~ 75 Hz

Display Color

16.7M

Resolution

Optimum resolution	1440 x 900 @ 60 Hz
Maximum resolution	1440 x 900 @ 75 Hz

Input Signal, Terminated

RGB Analog

0.7 Vp-p ± 5 %

Separate H/V sync, Composite, SOG

TTL level (V high ≥ 2.0 V, V low ≤ 0.8 V)

Maximum Pixel Clock

137 MHz (Analog)

Power Supply

AC 100 - 240 V~ (+/- 10 %), 50/60 Hz ± 3 Hz

Signal Cable

15pin - to - 15pin D-sub cable, Detachable

Dimensions (W x H x D) / Weight

454.5 x 331.5 x 75 mm / 17.9 x 13.1 x 3.0 inch (Without Stand)

454.5 x 400 x 195 mm / 17.9 x 15.7 x 7.7 inch (With Stand) / 4.6 kg / 10.1 Ibs

Environmental considerations

Operating	Temperature : 50 °F ~ 104 °F (10 °C ~ 40 °C) Humidity : 10 % ~ 80 %, non-condensing
Storage	Temperature : -4 °F ~ 113 °F (-20 °C ~ 45 °C) Humidity : 5 % ~ 95 %, non-condensing

Plug and Play Capability

This monitor can be installed on any Plug & Play compatible system. The interaction of the monitor and the computer systems will provide the best operating conditions and monitor settings. In most cases, the monitor installation will proceed automatically, unless the user wishes to select alternate settings.

Dot Acceptable

TFT-LCD panels manufactured by using advanced semiconductor technology with precision of 1ppm (one millionth) above are used for this product. But the pixels of RED,

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Dot Acceptable
GREEN, BLUE and WHITE color appear to be bright sometimes or some black pixels may be seen. This is not from bad quality and you can use it without any problems. For example, the number of TFT-LCD sub pixels contained in this product are 3,888,000.

Note

Design and specifications are subject to change without prior notice.

Class B Equipment (Information Communication equipment for residential use)

This product complies with the Electromagnetic Compatibility Directives for residential use and can be used in all areas including common residential areas. (Class B equipment emits less electromagnetic waves than Class A equipment.)

PowerSaver

This monitor has a built-in power management system called PowerSaver. This system saves energy by switching your monitor to low-power mode when it has not been used for a certain amount of time. The monitor automatically returns to normal operation when you press a key on the keyboard. For energy conservation, turn your monitor OFF when it is not needed, or when leaving it unattended for long periods. The PowerSaver system operates with a VESA DPM compliant video card installed in your computer. Use the software utility installed on your computer to set up this feature.

State	Normal Operation	Power saving mode	Power off (Power button) EPA/ENERGY 2000
Power Indicator	On	Blinking	Off
Power Consumption	34 watts	Less than1 watts	0.3 watts

This monitor is EPA ENERGY STAR® compliant and ENERGY2000 compliant when used with a computer equipped with VESA DPM functionality.

As an ENERGY STAR® Partner, SAMSUNG has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

Preset Timing Modes

If the signal transferred from the computer is the same as the following Preset Timing Modes, the screen will be adjusted automatically. However, if the signal differs, the screen may go blank while the power LED is on. Refer to the video card manual and adjusts the screen as follows.

Display Mode	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
IBM, 640 x 350	31.469	70.086	25.175	+/-
IBM, 640 x 480	31.469	59.940	25.175	-/-
IBM, 720 x 400	31.469	70.087	28.322	-/+
MAC, 640 x 480	35.000	66.667	30.240	-/-
MAC, 832 x 624	49.726	74.551	57.284	-/-
MAC, 1152 x 870	68.681	75.062	100.000	-/-

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Display Mode	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
VESA, 640 x 480	37.861	72.809	31.500	-/-
VESA, 640 x 480	37.500	75.000	31.500	-/-
VESA, 800 x 600	35.156	56.250	36.000	+/+
VESA, 800 x 600	37.879	60.317	40.000	+/+
VESA, 800 x 600	48.077	72.188	50.000	+/+
VESA, 800 x 600	46.875	75.000	49.500	+/+
VESA, 1024 x 768	48.363	60.004	65.000	-/-
VESA, 1024 x 768	56.476	70.069	75.000	-/-
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Horizontal Frequency

The time to scan one line connecting the right edge to the left edge of the screen horizontally is called the Horizontal Cycle and the inverse number of the Horizontal Cycle is called the Horizontal Frequency. Unit: kHz

Vertical Frequency

Like a fluorescent lamp, the screen has to repeat the same image many times per second to display an image to the user. The frequency of this repetition is called the Vertical Frequency or Refresh Rate. Unit: Hz

General

General	
Model Name	SyncMaster T200N

LCD Panel	
Size	20 inch (51 cm)
Display area	433.44 mm (H) x 270.9 mm (V)
Pixel Pitch	0.258 mm (H) x 0.258 mm (V)

Synchronization	
Horizontal	30 ~ 81 kHz
Vertical	56 ~ 75 Hz

Display Color
16.7M

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Resolution

Optimum resolution	1680 x 1050 @ 60 Hz
Maximum resolution	1680 x 1050 @ 60 Hz

Input Signal, Terminated

RGB Analog

0.7 Vp-p ± 5 %

Separate H/V sync, Composite, SOG

TTL level (V high ≥ 2.0 V, V low ≤ 0.8 V)

Maximum Pixel Clock

146 MHz (Analog)

Power Supply

AC 100 - 240 V~ (+/- 10 %), 50/60 Hz ± 3 Hz

Signal Cable

15pin - to - 15pin D-sub cable, Detachable

Dimensions (W x H x D) / Weight

486 x 350 x 74.5 mm / 19.1 X 13.8 X 2.9 inch (Without Stand)

486 x 422 x 215 mm / 19.1 X 16.6 X 8.5 inch (With Stand) / 5.4 kg / 11.9 Ibs

Environmental considerations

Operating	Temperature : 50 °F ~ 104 °F (10 °C ~ 40 °C) Humidity : 10 % ~ 80 %, non-condensing
Storage	Temperature : -4 °F ~ 113 °F (-20 °C ~ 45 °C) Humidity : 5 % ~ 95 %, non-condensing

Plug and Play Capability

This monitor can be installed on any Plug & Play compatible system. The interaction of the monitor and the computer systems will provide the best operating conditions and monitor settings. In most cases, the monitor installation will proceed automatically, unless the user wishes to select alternate settings.

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Class B Equipment (Information Communication equipment for residential use)

This product complies with the Electromagnetic Compatibility Directives for residential use and can be used in all areas including common residential areas. (Class B equipment emits less electromagnetic waves than Class A equipment.)

PowerSaver

This monitor has a built-in power management system called PowerSaver. This system saves energy by switching your monitor to low-power mode when it has not been used for a certain amount of time. The monitor automatically returns to normal operation when you press a key on the keyboard. For energy conservation, turn your monitor OFF when it is not needed, or when leaving it unattended for long periods. The PowerSaver system operates with a VESA DPM compliant video card installed in your computer. Use the software utility installed on your computer to set up this feature.

State	Normal Operation	Power saving mode	Power off (Power button) EPA/ENERGY 2000
Power Indicator	On	Blinking	Off
Power Consumption	40 watts	Less than1 watts	0.3 watts

This monitor is EPA ENERGY STAR® compliant and ENERGY2000 compliant when used with a computer equipped with VESA DPM functionality.

As an ENERGY STAR® Partner, SAMSUNG has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

Preset Timing Modes

If the signal transferred from the computer is the same as the following Preset Timing Modes, the screen will be adjusted automatically. However, if the signal differs, the screen may go blank while the power LED is on. Refer to the video card manual and adjusts the screen as follows.

Display Mode	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
IBM, 640 x 350	31.469	70.086	25.175	+/-
IBM, 640 x 480	31.469	59.940	25.175	-/-
IBM, 720 x 400	31.469	70.087	28.322	-/+
MAC, 640 x 480	35.000	66.667	30.240	-/-
MAC, 832 x 624	49.726	74.551	57.284	-/-
MAC, 1152 x 870	68.681	75.062	100.000	-/-
VESA, 640 x 480	37.861	72.809	31.500	-/-
VESA, 640 x 480	37.500	75.000	31.500	-/-
VESA, 800 x 600	35.156	56.250	36.000	+/+
VESA, 800 x 600	37.879	60.317	40.000	+/+
VESA, 800 x 600	48.077	72.188	50.000	+/+
VESA, 800 x 600	46.875	75.000	49.500	+/+
VESA, 1024 x 768	48.363	60.004	65.000	-/-

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Display Mode	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
VESA, 1024 x 768	56.476	70.069	75.000	-/-
VESA, 1024 x 768	60.023	75.029	78.750	+/+
VESA, 1152 x 864	67.500	75.000	108.000	+/+
VESA, 1280 X 960	60.000	60.000	108.000	+/+
VESA, 1280 X 1024	79.976	75.025	135.000	+/+
VESA, 1680 X 1050	64.674	59.883	119.000	+/-

Horizontal Frequency

The time to scan one line connecting the right edge to the left edge of the screen horizontally is called the Horizontal Cycle and the inverse number of the Horizontal Cycle is called the Horizontal Frequency. Unit: kHz

Vertical Frequency

Like a fluorescent lamp, the screen has to repeat the same image many times per second to display an image to the user. The frequency of this repetition is called the Vertical Frequency or Refresh Rate. Unit: Hz

General

General	
Model Name	SyncMaster T200GN

LCD Panel	
Size	20 inch (51 cm)
Display area	433.44 mm (H) x 270.9 mm (V)
Pixel Pitch	0.258 mm (H) x 0.258 mm (V)

Synchronization	
Horizontal	30 ~ 81 kHz
Vertical	56 ~ 75 Hz

Display Color

16.7M

Resolution	
Optimum resolution	1680 x 1050 @ 60 Hz
Maximum resolution	1680 x 1050 @ 60 Hz

Input Signal, Terminated

RGB Analog

0.7 Vp-p ± 5 %

Separate H/V sync, Composite, SOG

TTL level (V high ≥ 2.0 V, V low ≤ 0.8 V)

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Maximum Pixel Clock

146 MHz (Analog)

Power Supply

AC 100 - 240 V~ (+/- 10 %), 50/60 Hz ± 3 Hz

Signal Cable

15pin - to - 15pin D-sub cable, Detachable

Dimensions (W x H x D) / Weight

486 x 350 x 74.5 mm / 19.1 X 13.8 X 2.9 inch (Without Stand)

486 x 422 x 215 mm / 19.1 X 16.6 X 8.5 inch (With Stand) / 5.4 kg / 11.9 Ibs

Environmental considerations

Operating	Temperature : 50 °F ~ 104 °F (10 °C ~ 40 °C) Humidity : 10 % ~ 80 %, non-condensing
Storage	Temperature : -4 °F ~ 113 °F (-20 °C ~ 45 °C) Humidity : 5 % ~ 95 %, non-condensing

Plug and Play Capability

This monitor can be installed on any Plug & Play compatible system. The interaction of the monitor and the computer systems will provide the best operating conditions and monitor settings. In most cases, the monitor installation will proceed automatically, unless the user wishes to select alternate settings.

Dot Acceptable

TFT-LCD panels manufactured by using advanced semiconductor technology with precision of 1ppm (one millionth) above are used for this product. But the pixels of RED, GREEN, BLUE and WHITE color appear to be bright sometimes or some black pixels may be seen. This is not from bad quality and you can use it without any problems.

For example, the number of TFT-LCD sub pixels contained in this product are 5,292,000.

Note

Design and specifications are subject to change without prior notice.

Class B Equipment (Information Communication equipment for residential use)

This product complies with the Electromagnetic Compatibility Directives for residential use and can be used in all areas including common residential areas. (Class B equipment emits less electromagnetic waves than Class A equipment.)

PowerSaver

This monitor has a built-in power management system called PowerSaver. This system saves energy by switching your monitor to low-power mode when it has not been used for a certain amount of time. The monitor automatically returns to normal operation when you press a key on the keyboard. For energy conservation, turn your monitor OFF when it is not needed, or when leaving it unattended for long periods. The PowerSaver system operates with a VESA DPM compliant video card installed in your computer. Use the software utility installed on your computer to set up this feature.

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State	Normal Operation	Power saving mode	Power off (Power button) EPA/ENERGY 2000
Power Indicator	On	Blinking	Off
Power Consumption	40 watts	Less than1 watts	0.3 watts

This monitor is EPA ENERGY STAR® compliant and ENERGY2000 compliant when used with a computer equipped with VESA DPM functionality.

As an ENERGY STAR® Partner, SAMSUNG has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

Preset Timing Modes

If the signal transferred from the computer is the same as the following Preset Timing Modes, the screen will be adjusted automatically. However, if the signal differs, the screen may go blank while the power LED is on. Refer to the video card manual and adjusts the screen as follows.

Display Mode	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
IBM, 640 x 350	31.469	70.086	25.175	+/-
IBM, 640 x 480	31.469	59.940	25.175	-/-
IBM, 720 x 400	31.469	70.087	28.322	-/+
MAC, 640 x 480	35.000	66.667	30.240	-/-
MAC, 832 x 624	49.726	74.551	57.284	-/-
MAC, 1152 x 870	68.681	75.062	100.000	-/-
VESA, 640 x 480	37.861	72.809	31.500	-/-
VESA, 640 x 480	37.500	75.000	31.500	-/-
VESA, 800 x 600	35.156	56.250	36.000	+/+
VESA, 800 x 600	37.879	60.317	40.000	+/+
VESA, 800 x 600	48.077	72.188	50.000	+/+
VESA, 800 x 600	46.875	75.000	49.500	+/+
VESA, 1024 x 768	48.363	60.004	65.000	-/-
VESA, 1024 x 768	56.476	70.069	75.000	-/-
VESA, 1024 x 768	60.023	75.029	78.750	+/+
VESA, 1152 x 864	67.500	75.000	108.000	+/+
VESA, 1280 X 960	60.000	60.000	108.000	+/+
VESA, 1280 X 1024	79.976	75.025	135.000	+/+
VESA, 1680 X 1050	64.674	59.883	119.000	+/-

Horizontal Frequency

The time to scan one line connecting the right edge to the left edge of the screen horizontally is called the Horizontal Cycle and the inverse number of the Horizontal Cycle is called the Horizontal Frequency. Unit: kHz

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Vertical Frequency

Like a fluorescent lamp, the screen has to repeat the same image many times per second to display an image to the user. The frequency of this repetition is called the Vertical Frequency or Refresh Rate. Unit: Hz

General

General	
Model Name	SyncMaster T220N

LCD Panel	
Size	22 inch (55 cm)
Display area	473.76 mm (H) x 296.1 mm (V)
Pixel Pitch	0.282 mm (H) x 0.282 mm (V)

Synchronization	
Horizontal	30 ~ 81 kHz
Vertical	56 ~ 75 Hz

Display Color

16.7M

Resolution	
Optimum resolution	1680 x 1050 @ 60 Hz
Maximum resolution	1680 x 1050 @ 60 Hz

Input Signal, Terminated

RGB Analog

0.7 Vp-p ± 5 %

Separate H/V sync, Composite, SOG

TTL level (V high ≥ 2.0 V, V low ≤ 0.8 V)

Maximum Pixel Clock

146 MHz (Analog)

Power Supply

AC 100 - 240 V~ (+/- 10 %), 50/60 Hz ± 3 Hz

Signal Cable

15pin - to - 15pin D-sub cable, Detachable

Dimensions (W x H x D) / Weight

520 x 373.5 x 74.5 mm / 20.5 X 14.7 X 2.9 inch (Without Stand)

520 x 442 x 215 mm / 20.5 X 17.4 X 8.5 inch (With Stand) / 5.8 kg / 12.8 Ibs

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Environmental considerations	
Operating	Temperature : 50 °F ~ 104 °F (10 °C ~ 40 °C) Humidity : 10 % ~ 80 %, non-condensing
Storage	Temperature : -4 °F ~ 113 °F (-20 °C ~ 45 °C) Humidity : 5 % ~ 95 %, non-condensing

Plug and Play Capability

This monitor can be installed on any Plug & Play compatible system. The interaction of the monitor and the computer systems will provide the best operating conditions and monitor settings. In most cases, the monitor installation will proceed automatically, unless the user wishes to select alternate settings.

Dot Acceptable

TFT-LCD panels manufactured by using advanced semiconductor technology with precision of 1ppm (one millionth) above are used for this product. But the pixels of RED, GREEN, BLUE and WHITE color appear to be bright sometimes or some black pixels may be seen. This is not from bad quality and you can use it without any problems.

For example, the number of TFT-LCD sub pixels contained in this product are 5,292,000.

Note

Design and specifications are subject to change without prior notice.

Class B Equipment (Information Communication equipment for residential use)

This product complies with the Electromagnetic Compatibility Directives for residential use and can be used in all areas including common residential areas. (Class B equipment emits less electromagnetic waves than Class A equipment.)

PowerSaver

This monitor has a built-in power management system called PowerSaver. This system saves energy by switching your monitor to low-power mode when it has not been used for a certain amount of time. The monitor automatically returns to normal operation when you press a key on the keyboard. For energy conservation, turn your monitor OFF when it is not needed, or when leaving it unattended for long periods. The PowerSaver system operates with a VESA DPM compliant video card installed in your computer. Use the software utility installed on your computer to set up this feature.

State	Normal Operation	Power saving mode	Power off (Power button) EPA/ENERGY 2000
Power Indicator	On	Blinking	Off
Power Consumption	45 watts	Less than1 watts	0.3 watts

This monitor is EPA ENERGY STAR® compliant and ENERGY2000 compliant when used with a computer equipped with VESA DPM functionality.

As an ENERGY STAR® Partner, SAMSUNG has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

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Preset Timing Modes

If the signal transferred from the computer is the same as the following Preset Timing Modes, the screen will be adjusted automatically. However, if the signal differs, the screen may go blank while the power LED is on. Refer to the video card manual and adjusts the screen as follows.

Display Mode	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
IBM, 640 x 350	31.469	70.086	25.175	+/-
IBM, 640 x 480	31.469	59.940	25.175	-/-
IBM, 720 x 400	31.469	70.087	28.322	-/+
MAC, 640 x 480	35.000	66.667	30.240	-/-
MAC, 832 x 624	49.726	74.551	57.284	-/-
MAC, 1152 x 870	68.681	75.062	100.000	-/-
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VESA, 1024 x 768	48.363	60.004	65.000	-/-
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VESA, 1280 X 960	60.000	60.000	108.000	+/+
VESA, 1280 X 1024	79.976	75.025	135.000	+/+
VESA, 1680 X 1050	64.674	59.883	119.000	+/-

Horizontal Frequency

The time to scan one line connecting the right edge to the left edge of the screen horizontally is called the Horizontal Cycle and the inverse number of the Horizontal Cycle is called the Horizontal Frequency. Unit: kHz

Vertical Frequency

Like a fluorescent lamp, the screen has to repeat the same image many times per second to display an image to the user. The frequency of this repetition is called the Vertical Frequency or Refresh Rate. Unit: Hz

General

General	
Model Name	SyncMaster T220GN

LCD Panel	
Size	22 inch (55 cm)
Display area	473.76 mm (H) x 296.1 mm (V)

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LCD Panel

Pixel Pitch	0.282 mm (H) x 0.282 mm (V)

Synchronization

Horizontal	30 ~ 81 kHz
Vertical	56 ~ 75 Hz

Display Color

16.7M

Resolution

Optimum resolution	1680 x 1050 @ 60 Hz
Maximum resolution	1680 x 1050 @ 60 Hz

Input Signal, Terminated

RGB Analog

0.7 Vp-p ± 5 %

Separate H/V sync, Composite, SOG

TTL level (V high ≥ 2.0 V, V low ≤ 0.8 V)

Maximum Pixel Clock

146 MHz (Analog)

Power Supply

AC 100 - 240 V~ (+/- 10 %), 50/60 Hz ± 3 Hz

Signal Cable

15pin - to - 15pin D-sub cable, Detachable

Dimensions (W x H x D) / Weight

520 x 373.5 x 74.5 mm / 20.5 X 14.7 X 2.9 inch (Without Stand)

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Environmental considerations

Operating	Temperature : 50 °F ~ 104 °F (10 °C ~ 40 °C) Humidity : 10 % ~ 80 %, non-condensing
Storage	Temperature : -4 °F ~ 113 °F (-20 °C ~ 45 °C) Humidity : 5 % ~ 95 %, non-condensing

Plug and Play Capability

This monitor can be installed on any Plug & Play compatible system. The interaction of the monitor and the computer systems will provide the best operating conditions and monitor settings. In most cases, the monitor installation will proceed automatically, unless the user wishes to select alternate settings.

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Dot Acceptable

TFT-LCD panels manufactured by using advanced semiconductor technology with precision of 1ppm (one millionth) above are used for this product. But the pixels of RED, GREEN, BLUE and WHITE color appear to be bright sometimes or some black pixels may be seen. This is not from bad quality and you can use it without any problems.

For example, the number of TFT-LCD sub pixels contained in this product are 5,292,000.

Note

Design and specifications are subject to change without prior notice.

Class B Equipment (Information Communication equipment for residential use)

This product complies with the Electromagnetic Compatibility Directives for residential use and can be used in all areas including common residential areas. (Class B equipment emits less electromagnetic waves than Class A equipment.)

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This monitor has a built-in power management system called PowerSaver. This system saves energy by switching your monitor to low-power mode when it has not been used for a certain amount of time. The monitor automatically returns to normal operation when you press a key on the keyboard. For energy conservation, turn your monitor OFF when it is not needed, or when leaving it unattended for long periods. The PowerSaver system operates with a VESA DPM compliant video card installed in your computer. Use the software utility installed on your computer to set up this feature.

State	Normal Operation	Power saving mode	Power off (Power button) EPA/ENERGY 2000
Power Indicator	On	Blinking	Off
Power Consumption	45 watts	Less than1 watts	0.3 watts

This monitor is EPA ENERGY STAR® compliant and ENERGY2000 compliant when used with a computer equipped with VESA DPM functionality.

As an ENERGY STAR® Partner, SAMSUNG has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

Preset Timing Modes

If the signal transferred from the computer is the same as the following Preset Timing Modes, the screen will be adjusted automatically. However, if the signal differs, the screen may go blank while the power LED is on. Refer to the video card manual and adjusts the screen as follows.

Display Mode	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
IBM, 640 x 350	31.469	70.086	25.175	+/-
IBM, 640 x 480	31.469	59.940	25.175	-/-
IBM, 720 x 400	31.469	70.087	28.322	-/+
MAC, 640 x 480	35.000	66.667	30.240	-/-
MAC, 832 x 624	49.726	74.551	57.284	-/-

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Display Mode	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
MAC, 1152 x 870	68.681	75.062	100.000	-/-
VESA, 640 x 480	37.861	72.809	31.500	-/-
VESA, 640 x 480	37.500	75.000	31.500	-/-
VESA, 800 x 600	35.156	56.250	36.000	+/+
VESA, 800 x 600	37.879	60.317	40.000	+/+
VESA, 800 x 600	48.077	72.188	50.000	+/+
VESA, 800 x 600	46.875	75.000	49.500	+/+
VESA, 1024 x 768	48.363	60.004	65.000	-/-
VESA, 1024 x 768	56.476	70.069	75.000	-/-
VESA, 1024 x 768	60.023	75.029	78.750	+/+
VESA, 1152 x 864	67.500	75.000	108.000	+/+
VESA, 1280 X 960	60.000	60.000	108.000	+/+
VESA, 1280 X 1024	79.976	75.025	135.000	+/+
VESA, 1680 X 1050	64.674	59.883	119.000	+/-

Horizontal Frequency

The time to scan one line connecting the right edge to the left edge of the screen horizontally is called the Horizontal Cycle and the inverse number of the Horizontal Cycle is called the Horizontal Frequency. Unit: kHz

Vertical Frequency

Like a fluorescent lamp, the screen has to repeat the same image many times per second to display an image to the user. The frequency of this repetition is called the Vertical Frequency or Refresh Rate. Unit: Hz

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Information

{T190N,T190GN }

For Better Display

Adjust the computer resolution and screen injection rate (refresh rate) on the computer as described below to enjoy the best picture quality. You can have an uneven picture quality on screen if the best picture quality is not provided for TFT-LCD.

- Resolution: 1440 x 900
- Vertical frequency (refresh rate): 60 Hz

TFT-LCD panels manufactured by using advanced semiconductor technology with a precision of 1ppm (one millionth) and above is used for this product. But the pixels of RED, GREEN, BLUE and WHITE color seem to be bright sometimes or some of black pixels could be seen. This is not from bad quality and you can use it without any problems.

- For example, the number of TFT-LCD sub pixels contained in this product are 3,888,000.

When cleaning the monitor and the panel outside, please apply the recommended small amount of cleaner by using a soft cloth to polish. Do not force the LCD area but rub softly.

If excessive force is applied, you may stain it.

If you are not satisfied with the picture quality, you can get better quality of picture by performing the "**Auto Adjustment** function" in display screen that is appeared as window termination button is pressed.

If there's still noise after the automatic adjustment, use the **Fine**/**Coarse** adjustment function.

When viewing a fixed screen for an extended period of time, a residual image or blurriness may appear.

Change the mode to energy save or set a screensaver to move the picture when you need to be away from the monitor for an extended period of time.

{T190N,T190GN }

PRODUCT INFORMATION (Image Retention Free)

LCD Monitors and TVs may have image retention when switching from one image to another especially after displaying a stationary image for a long time.

This guide is to demonstrate correct usage of LCD products in order to protect them from Image retention.

Warranty

Warranty does not cover any damage caused by image retention.

Burn-in is not covered by the warranty.

What is Image retention ?

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During normal operation of a LCD panel, pixel image retention doesn't occur. However, if the same image is displayed for a long time, a slight difference in electric charge accumulates between the two electrodes which encase the liquid crystal. This may cause the liquid crystal to build up in a certain areas of the display. Thus, the previous image is retained when switching to a new video image. All display products, including LCD, are subject to image retention. This is not a product defect.

Please follow the suggestions below to protect your LCD from image retention.

Power Off, Screen Saver, or Power Save Mode

Ex)

- Turn the power off when using a stationary pattern.
  - Turn the power off for 4 hours after 20 hours in use
  - Turn the power off for 2 hours after 12 hours in use
- Use a Screen saver if possible
  - Screen saver in one color or a moving image is recommended.
- Set the Monitor to power off with the PC Display Properties Power Scheme.

Suggestions for specific applications

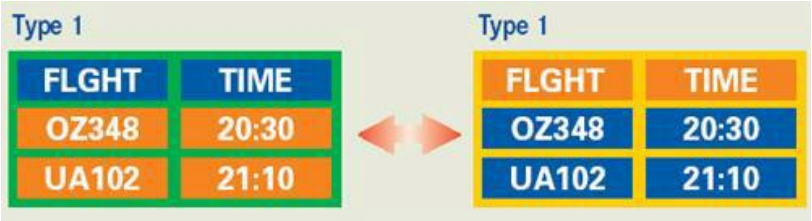
Ex) Airports, Transit Stations, Stock Markets, Banks, and Controlling Systems We recommend that you follow set up of your display system program as below:

Display Information together with Logo or Moving image cycle.

Ex) Cycle : Display Information for 1 hour followed by a Display Logo or moving image for 1 minute.

Change the Color Information periodically (Use 2 different colors).

Ex) Rotate the Color Information with 2 colors every 30 minutes.



Avoid using a combination of characters and background color with large difference in luminance.

Avoid using Grey colors, which can cause Image retention easily.

- Avoid: Colors with big difference in luminance (Black & White, Grey)

  Ex)

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- Recommended settings: Bright colors with little difference in luminance
  - Change the characters color and background color every 30 minutes

    Ex)

  - Every 30 minutes, change the characters with movement.

    Ex)

The best way to protect your monitor from Image retention is to set your PC or System to operate a Screen Saver program when you are not using it.

Image retention may not occur when a LCD panel is operated under normal conditions.

Normal conditions are defined as continuously changing video patterns. When the LCD panel is operated for a long time with a fixed pattern (-over 12 hours-), there may be slight difference in voltage between electrodes that work the liquid crystal (LC) in a pixel. The voltage difference between electrodes increases with time, forcing the liquid crystal to lean. When this occurs, the previous image may be seen when the pattern is changed.

To prevent this, the accumulated voltage difference must be decreased.

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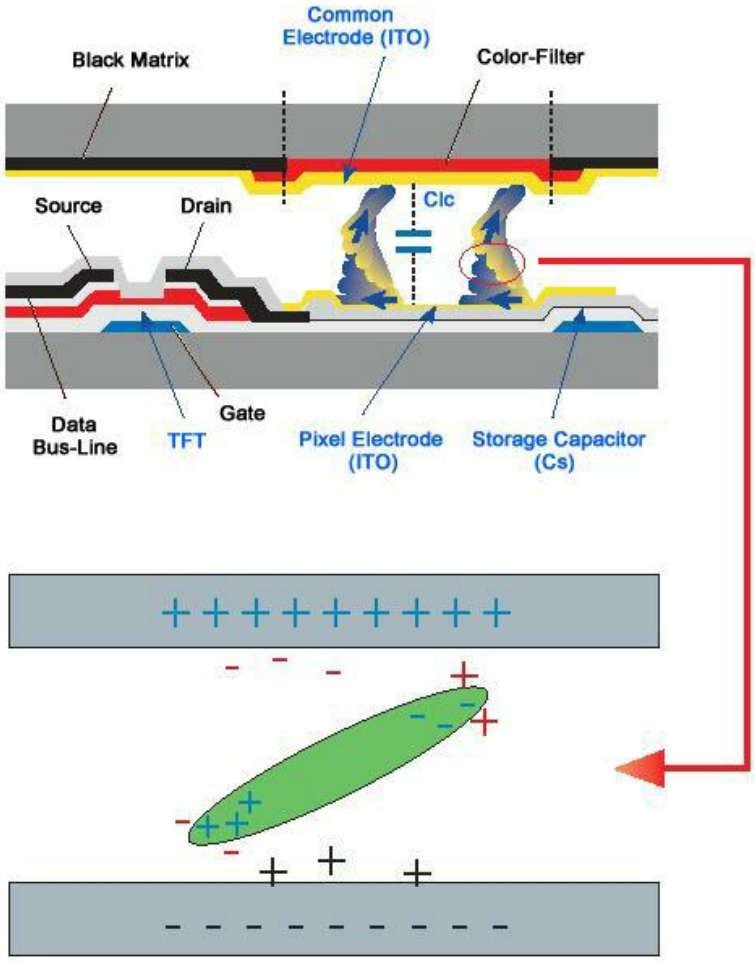

Our LCD Monitor satisfies ISO13406-2 Pixel fault Class II

{T200N,T200GN,T220N,T220GN }

For Better Display

Adjust the computer resolution and screen injection rate (refresh rate) on the computer as described below to enjoy the best picture quality. You can have an uneven picture quality on screen if the best picture quality is not provided for TFT-LCD.

- Resolution: 1680 x 1050
- Vertical frequency (refresh rate): 60 Hz

TFT-LCD panels manufactured by using advanced semiconductor technology with a precision of 1ppm (one millionth) and above is used for this product. But the pixels of RED, GREEN, BLUE and WHITE color seem to be bright sometimes or some of black pixels could be seen. This is not from bad quality and you can use it without any problems.

- For example, the number of TFT-LCD sub pixels contained in this product are 5,292,000.

When cleaning the monitor and the panel outside, please apply the recommended small amount of cleaner by using a soft cloth to polish. Do not force the LCD area but rub softly.

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If excessive force is applied, you may stain it.

If you are not satisfied with the picture quality, you can get better quality of picture by performing the "**Auto Adjustment** function" in display screen that is appeared as window termination button is pressed.

If there's still noise after the automatic adjustment, use the **Fine**/**Coarse** adjustment function.

When viewing a fixed screen for an extended period of time, a residual image or blurriness may appear.

Change the mode to energy save or set a screensaver to move the picture when you need to be away from the monitor for an extended period of time.

{T200N,T200GN,T220N,T220GN }

PRODUCT INFORMATION (Image Retention Free)

LCD Monitors and TVs may have image retention when switching from one image to another especially after displaying a stationary image for a long time.

This guide is to demonstrate correct usage of LCD products in order to protect them from Image retention.

Warranty

Warranty does not cover any damage caused by image retention.

Burn-in is not covered by the warranty.

What is Image retention ?

During normal operation of a LCD panel, pixel image retention doesn't occur. However, if the same image is displayed for a long time, a slight difference in electric charge accumulates between the two electrodes which encase the liquid crystal. This may cause the liquid crystal to build up in a certain areas of the display. Thus, the previous image is retained when switching to a new video image. All display products, including LCD, are subject to image retention. This is not a product defect.

Please follow the suggestions below to protect your LCD from image retention.

Power Off, Screen Saver, or Power Save Mode

Ex)

- Turn the power off when using a stationary pattern.
  - Turn the power off for 4 hours after 20 hours in use
  - Turn the power off for 2 hours after 12 hours in use
- Use a Screen saver if possible
  - Screen saver in one color or a moving image is recommended.
- Set the Monitor to power off with the PC Display Properties Power Scheme.

Suggestions for specific applications

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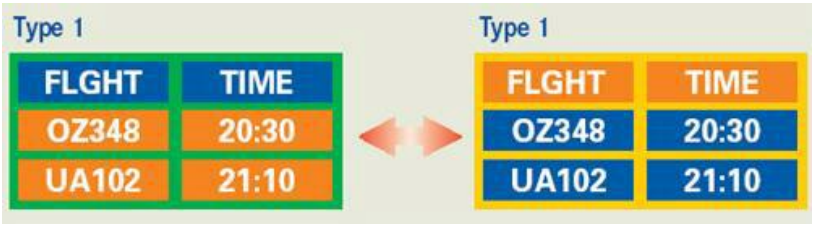
Ex) Airports, Transit Stations, Stock Markets, Banks, and Controlling Systems We recommend that you follow set up of your display system program as below:

Display Information together with Logo or Moving image cycle.

Ex) Cycle : Display Information for 1 hour followed by a Display Logo or moving image for 1 minute.

Change the Color Information periodically (Use 2 different colors).

Ex) Rotate the Color Information with 2 colors every 30 minutes.



Avoid using a combination of characters and background color with large difference in luminance.

Avoid using Grey colors, which can cause Image retention easily.

- Avoid: Colors with big difference in luminance (Black & White, Grey)

  Ex)

- Recommended settings: Bright colors with little difference in luminance
  - Change the characters color and background color every 30 minutes

    Ex)

  - Every 30 minutes, change the characters with movement.

    Ex)

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The best way to protect your monitor from Image retention is to set your PC or System to operate a Screen Saver program when you are not using it.

Image retention may not occur when a LCD panel is operated under normal conditions.

Normal conditions are defined as continuously changing video patterns. When the LCD panel is operated for a long time with a fixed pattern (-over 12 hours-), there may be slight difference in voltage between electrodes that work the liquid crystal (LC) in a pixel. The voltage difference between electrodes increases with time, forcing the liquid crystal to lean. When this occurs, the previous image may be seen when the pattern is changed.

To prevent this, the accumulated voltage difference must be decreased.

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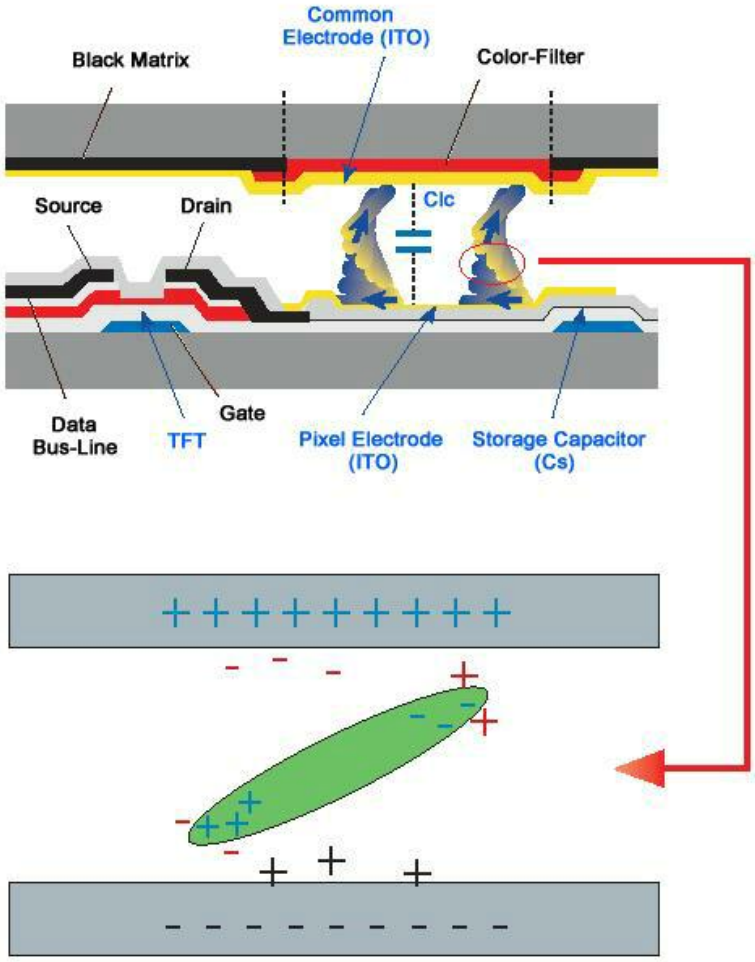

Our LCD Monitor satisfies ISO13406-2 Pixel fault Class II

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Appendix

Contact SAMSUNG WORLDWIDE

Note

If you have any questions or comments relating to Samsung products, please contact the SAMSUNG customer care center.

	North America	
U.S.A	1-800-SAMSUNG(726-7864)	http://www.samsung.com
CANADA	1-800-SAMSUNG(726-7864)	http://www.samsung.com/ca
MEXICO	01-800-SAMSUNG(726-7864)	http://www.samsung.com
	Latin America	
ARGENTINE	0800-333-3733	http://www.samsung.com/ar
BRAZIL	0800-124-421	http://www.samsung.com
	4004-0000	
CHILE	800-SAMSUNG(726-7864)	http://www.samsung.com/cl
COLOMBIA	01-8000112112	http://www.samsung.com/co
COSTA RICA	0-800-507-7267	http://www.samsung.com/latin
ECUADOR	1-800-10-7267	http://www.samsung.com/latin
EL SALVADOR	800-6225	http://www.samsung.com/latin
GUATEMALA	1-800-299-0013	http://www.samsung.com/latin
HONDURAS	800-7919267	
JAMAICA	1-800-234-7267	http://www.samsung.com/latin
NICARAGUA	00-1800-5077267	
PANAMA	800-7267	http://www.samsung.com/latin
PUERTO RICO	1-800-682-3180	http://www.samsung.com/latin
REP. DOMINICA	1-800-751-2676	http://www.samsung.com/latin
TRINIDAD & TOBAGO	1-800-SAMSUNG(726-7864)	http://www.samsung.com/latin
VENEZUELA	0-800-100-5303	http://www.samsung.com/latin
	Europe	
AUSTRIA	0800-SAMSUNG (726-7864)	http://www.samsung.com/at
BELGIUM	0032 (0)2 201 24 18	http://www.samsung.com/be
CZECH REPUBLIC	844 000 844	http://www.samsung.com/cz
Distributor pro Českou republiku: Samsung Zrt., česka organizační složka Vyskočilova 4, 14000 Praha 4		
DENMARK	70 70 19 70	http://www.samsung.com/dk
EIRE	0818 717 100	http://www.samsung.com/ie
FINLAND	030-6227 515	http://www.samsung.com/fi
FRANCE	3260 SAMSUNG (€ 0,15/Min)	http://www.samsung.com
	08 25 08 65 65 (€ 0,15/Min)	

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Europe

GERMANY	01805 - SAMSUNG (726-7864) (€ 0,14/Min)	http://www.samsung.com
HUNGARY	06-80-SAMSUNG (726-7864)	http://www.samsung.com
ITALIA	800-SAMSUNG (726-7864)	http://www.samsung.com
LUXEMBURG	0035 (0)2 261 03 710	http://www.samsung.com/be
NETHERLANDS	0900 SAMSUNG (726-7864)(€ 0,10/Min)	http://www.samsung.com/nl
NORWAY	815-56 480	http://www.samsung.com/no
POLAND	0 801 801 881	http://www.samsung.com/pl
	022-607-93-33	
PORTUGAL	80820-SAMSUNG (726-7864)	http://www.samsung.com/pt
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SPAIN	902 10 11 30	http://www.samsung.com
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LITHUANIA	8-800-77777	http://www.samsung.lt
KAZAKHSTAN	8-10-800-500-55-500	http://www.samsung.kz
KYRGYZSTAN	00-800-500-55-500	
RUSSIA	8-800-555-55-55	http://www.samsung.ru
TADJIKISTAN	8-10-800-500-55-500	
UKRAINE	8-800-502-0000	http://www.samsung.com
UZBEKISTAN	8-10-800-500-55-500	http://www.samsung.uz

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AUSTRALIA	1300 362 603	http://www.samsung.com
CHINA	800-810-5858	http://www.samsung.com
	010-6475 1880	
HONG KONG	3698 - 4698	http://www.samsung.com/hk
INDIA	3030 8282	http://www.samsung.com
	1800 110011	
INDONESIA	0800-112-8888	http://www.samsung.com
JAPAN	0120-327-527	http://www.samsung.com/jp
MALAYSIA	1800-88-9999	http://www.samsung.com/my
NEW ZEALAND	0800 SAMSUNG(726-7864)	http://www.samsung.com/nz
PHILIPPINES	1800-10-SAMSUNG(726-7864)	http://www.samsung.com/ph
SINGAPORE	1800-SAMSUNG(726-7864)	http://www.samsung.com
THAILAND	1800-29-3232, 02-689-3232	http://www.samsung.com

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Asia Pacific

TAIWAN	0800-329-999	http://www.samsung.com/tw
VIETNAM	1 800 588 889	http://www.samsung.com

Middle East & Africa

SOUTH AFRICA	0860-SAMSUNG(726-7864)	http://www.samsung.com
TURKEY	444 77 11	http://www.samsung.com
U.A.E	800-SAMSUNG(726-7864)	http://www.samsung.com
	8000-4726	

Terms

Dot Pitch	The image on a monitor is composed of red, green and blue dots. The closer the dots, the higher the resolution. The distance between two dots of the same color is called the 'Dot Pitch'. Unit: mm
Vertical Frequency	The screen must be redrawn several times per second in order to create and display an image for the user. The frequency of this repetition per second is called the Vertical Frequency or Refresh Rate. Unit: Hz Example: If the same light repeats itself 60 times per second, this is regarded as 60 Hz.
Horizontal Frequency	The time to scan one line connecting the right edge to the left edge of the screen horizontally is called the Horizontal Cycle. The inverse number of the Horizontal Cycle is called Horizontal Frequency. Unit: kHz
Interlace and Non-Interlace Methods	Showing the horizontal lines of the screen from the top to the bottom sequentially is called the Non-Interlace method while showing odd lines and then even lines in turn is called the Interlace method. The Non-Interlace method is used for the majority of monitors to ensure a clear image. The Interlace method is the same as that used in TVs.
Plug & Play	This is a function that provides the best quality screen for the user by allowing the computer and the monitor to exchange information automatically. This monitor follows the international standard VESA DDC for the Plug & Play function.
Resolution	The number of horizontal and vertical dots used to compose the screen image is called the 'resolution'. This number shows the accuracy of the display. A high resolution is good for performing multiple tasks as more image information can be shown on the screen. Example: If the resolution is 1680 x 1050 (1440 x 900), this means the screen is composed of 1680 (1440) horizontal dots (horizontal resolution) and 1050 (900) vertical lines (vertical resolution).

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Correct Disposal

Correct Disposal of This Product (Waste Electrical & Electronic Equipment) - Europe only

(Applicable in the European Union and other European countries with separate collection systems)

This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.

Authority

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